This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

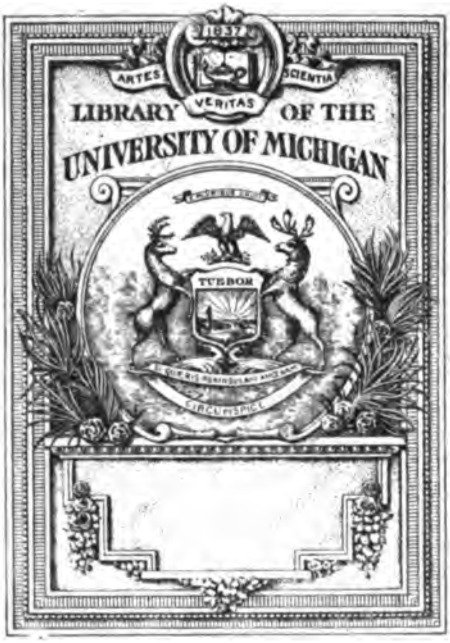
+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`



1837
ARTES VERITAS SCIENTIA
LIBRARY OF THE
UNIVERSITY OF MICHIGAN
TUEBOR
SI QUAERIS PENINSULAM AMOENAM CIRCUMSPICE

THE GIFT OF
Leland Stanford Univ

AS
36
.L533

LELAND STANFORD JUNIOR UNIVERSITY PUBLICATIONS
UNIVERSITY SERIES

THE HEMOLYMPH NODES OF THE SHEEP

STUDIES ON HEMOLYMPH NODES I.

A. W. MEYER
FROM THE
DIVISION OF ANATOMY
DEPARTMENT OF MEDICINE
STANFORD UNIVERSITY

STANFORD UNIVERSITY, CALIFORNIA
PUBLISHED BY THE UNIVERSITY
1914

Stanford University
Press

UNIVERSITY SERIES

INHERITANCE IN SILKWORMS, I. Vernon Lyman Kellogg, Professor of Entomology. 89 pp., 4 plates. 1908. Price $1.00.

THE OPISTHOBRANCHIATE MOLLUSCA OF THE BRANNER-AGASSIZ EXPEDITION TO BRAZIL. Frank Mace McFarland, Professor of Histology. 105 pp., 19 plates. 1909. Price, $1.00.

A STUDY OF THE NORMAL CONSTITUENTS OF THE POTABLE WATER OF THE SAN FRANCISCO PENINSULA. John Pearce Mitchell, Assistant Professor of Chemistry. 70 pp., 1 map. 1910. Price, 50c.

SYNOPSIS OF THE TRUE CRABS (BRACHYURA) OF MONTEREY BAY, CALIFORNIA. Frank Walter Weymouth. 64 pp., 14 plates. 1910. Price, 50c.

THE OSTEOLOGY OF CERTAIN SCOMBROID FISHES. Edwin Chapin Starks, Assistant Professor of Zoology. 49 pp., 2 plates, 1 text figure. 1911. Price, 50c.

A PHYSICAL THEORY OF ELECTRIFICATION. Fernando Sanford, Professor of Physics. 69 pp., 2 plates. 1911. Price, 50c.

THE MATZKE MEMORIAL VOLUME. Papers by John Ernst Matzke, late Professor of Romanic Languages, and Thirteen Colleagues. 162 pp. 1911. Price, $1.00.

DAS HISTORISCHE PRÄSENS IN DER ÄLTEREN DEUTSCHEN SPRACHE. Bruno Boezinger, Assistant Professor of Germanic Languages. 91 pp. 1912. Price, 50c.

THE EFFECT OF A STRICTLY VEGETABLE DIET ON THE SPONTANEOUS ACTIVITY, THE RATE OF GROWTH, AND THE LONGEVITY OF THE ALBINO RAT. James Rollin Slonaker, Assistant Professor of Physiology. 36 pp., 1 plate, 15 text figures. 1912. Price, 50c.

CATALOGUE DE TOUS LES LIVRES DE FEU M. CHAPELAIN. (Bibliothèque Nationale, Fonds Français, Nouv. Acq., No. 318.) Colbert Searles, Associate Professor of Romanic Languages. 119 pp., 2 plates. 1912. Price, 75c.

THE DUDLEY MEMORIAL VOLUME. Papers by William Russel Dudley, late Professor of Botany, and Several Colleagues. 137 pp., 12 text figures, 9 plates. 1913. Price, $1.00.

THE FISHES OF THE STANFORD EXPEDITION TO BRAZIL. Edwin Chapin Starks, Assistant Professor of Zoology. 77 pp., 15 plates. 1913. Price, 75c.

(Continued on third page of cover.)

THE HEMOLYMPH NODES OF THE SHEEP

STUDIES ON HEMOLYMPH NODES, I

CONTENTS.

Distribution, occurrence and appearance.
Lymphatic and vascular relations.
The microscopic structure.
The cellular content.
The question of mixed nodes.
The genesis of intermediate forms.
Classification.
Functions.
References.

INTRODUCTION

Although a number of species were investigated, this paper has purposely been limited to the sheep (*Ovis aries*), in order that a more comprehensive review of large numbers of hemolymph nodes could first be made. For even a slight familiarity with the subject makes it evident that it is not only necessary to examine many nodes in the different regions of the same animal, but also to examine large numbers in different animals, and perhaps of animals of varying ages as well. Moreover, a very comprehensive comparative study, although probably indispensable for the elucidation of some of the intricate problems of structure, function and development, usually introduces many additional and related problems which tend to obscure the issue regarding a single species. By first subjecting one species to a thorough examination the problem can also be better defined, many conflicting statements can be ignored, and much confusion avoided. It also seemed probable that an initial and careful comprehensive examination of one species would make it possible to decide with some degree of certainty whether, as recently and so often before reiterated, these organs in a given species are true hemolymph nodes or not, and whether a transformation of hemolypmh nodes into hemal or lymphatic nodes takes place. To this, and to some other ques-

292286

tions, an unusually large collection of material and a series of observations of some magnitude seem to justify a definite, even if not a final or necessarily a conclusive answer.

Although there are many considerations which would seem to suggest that the term *hemolymph* is a misnomer when applied to these nodes, this designation, which was suggested by Russel and first used by Robertson [24], is retained throughout a part of this article in order not to introduce a discussion of terms at the very beginning. It is necessary to state, however, that the terms peripheral and central sinuses have been rejected altogether, because no one has shown that they are comparable to the corresponding structures of lymph nodes. The only true sinuses of hemolymph nodes are the radicles of the venous system; the venous lacunae of Weidenreich; which structurally are tremendously dilated capillaries, and which form an integral part of the vascular system of the hemolymph node. The so-called peripheral and central sinuses of the hemolymph nodes can much more properly be designated as subcapsular or marginal and central—in the sense of internal only—blood spaces or areas, than as sinuses, since they are neither in direct communication with either the lymphatic or vascular circulations, as a rule.

The sheep was also chosen as the first subject of experiment and inquiry, because almost all investigators of hemolymph nodes had studied them in this animal to a greater or less extent; because the nodes are much more numerous than in any of the other domestic animals studied; and since a convenient, inexpensive, and also an abundant supply of material was afforded by the abattoirs, where an unlimited number of embryos and foetuses of all ages could easily be obtained. In addition, however, the carcasses of several dozen new-born lambs, two lambs of about five weeks old, and two young sheep six to eight months old, received special scrutiny. Besides, several thousand carcasses were examined and many thousands inspected in the abattoirs in various parts of the country. This varied material naturally afforded an excellent opportunity for observations regarding the relation of sex, age, breed, pregnancy, states of health and nutrition, castration, locality, seasonal changes, and hygienic conditions in general, to the occurrence, size, number and position of these "enigmatical structures." Living sheep could also be subjected to close scrutiny, the carcasses inspected later, and a thorough examination made of the viscera, with a view to detecting any possible compensatory relationship between hemolymph nodes and other organs, in varying conditions of nutrition and of health.

DISTRIBUTION, OCCURRENCE AND APPEARANCE

Even a cursory inspection of hundreds of carcasses in the large abattoirs confirmed the statement that the lumbar subvertebral region is the place in which the hemolymph nodes of the sheep are by far the most numerous, and that their occurrence near the renal arteries has been over-emphasized. Since the lumbar region is especially accessible, these nodes were chosen as the object of special study. In all except very fat sheep they lie exposed to view, and can always be recognized as a whole, even if not individually, as hemolymph nodes by the unaided eye. Hardening the tissue containing them in formaline, as stated by Warthin [31], did not, in my experience, make them any more conspicuous. Moreover, since their conspicuousness in the fresh state is due to the contained blood, any fixing or hardening agent which does not increase the color contrast between fresh blood and the fat in which they lie can, in the nature of things, not make them more conspicuous except in so far as shrinkage of the surrounding tissues makes them more prominent. Neither did formaline help materially in distinguishing very small nodes from punctiform hemorrhages, since it affected both alike, even if not to a like degree.

Even if they be small, a reasonably accurate count of the hemolymph nodes can, however, be made without difficulty in most cases *in the fresh state*. From careful counts in several dozen carcasses, supplemented by inspection of several thousand more, it was found that in sheep of mixed breeds the number of nodes in the lumbar sub-vertebral region varied from a few to at most fifty or sixty nodes. Although, to be sure, averages can mean little because of the great fluctuations which exist, a fair average number in this region in young sheep, according to my observations, would be twenty to thirty nodes. The total number in the whole animal varied, however, from half a dozen to a hundred and fifty nodes in exceptional cases. Three or four hundred nodes of *macroscopic* size, as estimated by Robertson [24] and confirmed later by Warthin [34] as an average number, were never found, in the entire body, including the viscera, even in the most exceptional cases. It is possible, to be sure, that there are breeds or conditions which justify the above estimates; but all evidence obtained in mixed breeds of Merino, Shropshire and Southdown—and just sheep—in the East, in the Middle States, and in the West, makes this supposition very improbable.

In foetuses near term, in several dozen new-born and in four lambs four weeks to six months old, for example, in which a careful examination of the fat in all regions was made with the aid of a hand lens, a dozen to a few dozen nodes at most were found. In the new-born only from four to six may be present. From the examination of a large number of foetuses the statement that the younger the foetus the fewer the nodes that can be recognized as hemolymph nodes, seems justified; for it is difficult indeed, as a rule, to successfully identify macroscopically any nodes as hemolymph nodes in any region, in foetuses less than three to four months old. Nevertheless, a striking fact is the occurrence of a greater number of hemolymph nodes in lambs and young sheep. In abattoirs, in which occasionally almost a thousand sheep are slaughtered daily, it is quite possible, in spite of customary mechanical osteological conversions of mutton into lamb, to determine—not in individual cases, of course—whether lambs or sheep are being slaughtered, by a cursory inspection of a number of nodes present in the lumbar region alone. Moreover, such a differentiation is especially easy when lambs and sheep have been put into separate pens before slaughtering, thus avoiding a mixing of the individual carcasses. In fact, these differences are sufficiently marked, so that even the butchers are aware of it and not infrequently comment upon the fact. In one instance, for example, in which a lot of six thousand wethers were slaughtered on successive days, two of the butchers spoke of the smaller number of nodes found in "Western" sheep, adding that in the home or "Eastern" sheep more were to be found. Their observations were entirely correct, but their conclusions were faulty, for it was incorrect to infer that locality or castration were the causative factors in this difference. v Schumacher [27] also mentions the fact that they are more common in young sheep. As reported by Weidenreich [37] and Warthin [31], the belief of butchers that sheep fresh from pasture have more hemolymph nodes, also found confirmation; but this is likely explained by the fact that such animals are usually lambs, or largely lambs or young sheep, rather than by the state of nutrition of the animals; for such an influence of diet would be as remarkable as surprising and unlikely.

No definite grouping of the hemolymph nodes of the sheep was found to exist, although they occur more abundantly in fairly well-defined regions. Besides, in the lumbar sub- and para-vertebral regions they commonly occur in numbers in the para-rectal fat; more rarely near the renal vessels; and sometimes in a more or less complete series extrapleurally in the intercostal spaces immediately lateral to the vertebral column and near the origins of the great vessels, in close proximity to the lymph nodes between the cervical and thoracic portions of the thymus, and in the region of the head thymus adjacent to the para-thymus glands.

From the latter glands they are indistinguishable in the fresh state, as pointed out by Drummond [5] and as previously reported by the writer. They never were found on the diaphragm as reported by Warthin [34], on the parietes, or in the sub-scapular, axillary or inguinal regions as reported by Meek [17] in pathological conditions in man, and but seldom and only in very small numbers in the omentum and in the mesentery. The latter fact is in marked contrast to the occurrence of supernumerary spleens in the cat (*Felis domestica*) and dog (*Canis familiaris*) as reported elsewhere.* Those found in the thoracic cavity, in the cervical region, and especially in the intercostal spaces, were smaller, more spherical, and less prominent than those in the lumbar region. Moreover, large specimens were seldom found in any of these regions, the grouping was less distinct, and their presence less constant. The occasional intercostal hemolymph nodes not infrequently simulated small subpleural hemorrhages so closely that they could not be distinguished from them in the fresh state, by inspection alone, and they were too small and too flat for puncture injections.

In the cervical region their occurrence is far less constant than in the abdominal and thoracic regions; but they may lie anywhere between the thorax and the base of the skull. Usually one or even several nodes can be found, however, near the bifurcation of the carotid arteries; and it is not improbable that they have been mistaken for and described as para-thyroid glands. In this and in other regions they often lie so close to the blood vessels that Weidenreich's [37] conclusion that they never lie in direct contact with, even if in close proximity to them, is not confirmed; nor can I confirm v Schumacher's observations that they usually lie near large lymph vessels, except in so far as large lymph vessels are present in the lumbar region. It should be added, however, that identification of these small cervical nodes was not always made by means of injections, but by microscopic examination and from gross appearances. Since, contrary to the statement of White [39], the latter means of identification is not wholly reliable, the above conclusions are open to question as far as the occurrence of nodes in the cervical region is concerned.

No correlation between the size and the number of hemolymph nodes in one region with those in another region, or with the size, number and condition of the lymphatic nodes, or with any other condition, could be established. Neither were they found enlarged in cases of pneumonia, deep jaundice, tuberculosis, or severe infections with *Oesophag-*

---

*See appendix, V.

ostoma columbanum or streptococci. Pregnancy or castration in themselves seemed to have no effect upon them. The same is true of differences in sex, breed, variations in fatness or poor nutrition, the locality from which the sheep were obtained, or recent hygienic conditions under which they were kept. These conclusions confirm Weidenreich's [37] observations in these respects. To be sure, the implication is not that they are never or can never be affected by all or any of these things. In case of the human hemolymph nodes, for example, it will be recalled that Warthin [33] reported a definite relationship between the occurrence of hemolymph nodes and certain blood diseases, and that Meek [17] also found them present in various pathological conditions in man.

While the above statement gives the usual distribution, individual nodes may, however, occur *anywhere in the fat near the viscera, from the base of the skull to the coccyx.* Although no thorough examination was made, none were ever seen between the muscles of the extremities, as stated by Crescenzi,* for bovines. *No node was found to be constant in position, in size, or in occurrence.* The only constant characteristic, aside from questions of structure and function, is their remarkable variability, and their constant occurrence in fat. It is more than likely, however, that the latter fact is without special significance; and, as in the case of the lymphatic nodes, it is probable that this association between hemolymph nodes and fat has been entirely overemphasized, or misinterpreted even, for the regions in which hemolymph nodes occur are those in which fat is normally present in all animals. Besides, a similar association exists between the main vascular, lymphatic and nerve trunks, sympathetic ganglia, and lymphatic nodes, the kidneys, accessory spleens, etc. Besides, many of the pevertebral nodes are not imbedded in fat but can be moved with the overlying peritoneum.

The variations in the size of hemolymph nodes were as great as those in number, the extremes lying between those invisible to the unaided eye and rarely large oval nodes one or two centimeters long. Both the largest and the smallest nodes were found more frequently in the lumbar region, but it must be remembered that this region was examined much more carefully and extensively than any other. In the cervical and thoracic regions they were often quite spherical, and only from two to four millimeters in diameter. The smallest nodes were always more globular, and, as already stated, often simulated punctiform hemorrhages very closely. The larger ones, on the other hand, were generally

---

*Crescenzi, L.: Contributo allo studio dei gangli ematici nei ruminanti. *La Clinica Veterinaria.* Anno 29, 1906.

flattened on the sides sustaining the greatest pressure, and resembled lymph nodes somewhat more closely in shape. Occasionally a group of nodes, or a single node, was found, which looked like a mass of beaded blood vessels, the contiguous walls of which had fused. In other cases isolated nodes were found from which a beaded vessel or vessels (figs. 1 and 2) closely simulating a lymphatic vessel in form, but dilated with blood, could be seen plainly for some distance from the node, as noted by Weidenreich. In still other instances the appearance was that of a blood vessel of somewhat varying calibre, which formed a loop with local thickenings. Pressure upon these nodular areas of the vessels would easily bring about complete collapse in the area of pressure, followed by subsequent refilling with blood. This effect is in marked contrast to the results of pressure upon hemolymph nodes of any size and location, for these could never be reduced appreciably in size even if subjected to strong pressure. Instead of collapsing they would invariably burst. In some cases these nodular complexes were formed by a number of small nodes which lay in close proximity to each other, or had become more or less completely fused. (Figs. 3 and 4.) Further reference will be made to these later.

Since the descriptions of the external appearance of hemolymph nodes found in the literature on the subject are quite adequate, this matter will be discussed here only in a purely incidental way. Intra vitam and not long post-mortem hemolymph nodes usually have the dark color of moderately venous blood. Rarely, however, light cherry red and scarlet nodes are seen. These are generally small, and lie immediately beneath the peritoneum. The prevailing color in fresh carcasses, however, varied from a bright red to dark chocolate, or even dull black. As pointed out by Robertson [24], this variation is probably chiefly due to differences in the degree of post-mortem oxygenation of the blood within the node. That this assumption is correct was shown by the fact that dark-colored nodes quickly turned to a bright red color when exposed to the air, provided of course that access to them was not made too difficult by the presence of a thick overlying layer of fat, or by the drying of the overlying peritoneum and capsule. This change to a bright color upon exposure is greatly accelerated by stripping the peritoneum overlying the node, or, still better, by exposing the node to pure oxygen. That this color change progresses gradually from the exterior to the interior can also be shown by sectioning nodes which have been exposed to the air or oxygen for varying intervals of time. Such sections show that the outer bright-red layer varies in thickness within limits, with the length of exposure to oxygen, for example. It was also noticed that in winter the color of nodes *in situ* on the carcasses was darker than in summer, which difference was evidently due to the fact that the severe cold of an open abattoir in a northern climate retarded the process of spontaneous post-mortem oxygenation, by making the overlying layers more impervious to the oxygen of the air, or by affecting the rate of chemical interchange. Ordinarily the change in color begins immediately after evisceration, and is noticeable at first in the smallest and most exposed node. However, the rate of the change of color is also dependent upon the presence and the thickness of the surrounding layer of blood in the peripheral blood space. That not all nodes change from a venous color when the abdomen is opened to a bright red upon exposure to the air later may, of course, be due to these and to other facts, as well as to variations in thickness of the capsule and the overlying fat. An examination of several hundred carcasses immediately after the abdomen was opened showed that the variations in color are very slight at this time. Very occasionally, however, a small scarlet node is seen among a group of venous-colored ones, which fact can probably be explained by differences in the circulatory conditions within the node. The peculiarly mottled appearance of nodes which often does not become very evident until fixation and hardening, can likewise be explained satisfactorily by peculiarities of structure. In these latter nodes, for example, the peripheral blood space is encroached upon here and there *intra vitam,* and often so as a result of shrinkage during fixation and hardening, by the lymphatic tissue—usually by follicles—and may hence be completely obliterated at some places. Wherever this occurs a gray patch or streak bordered by a deeper-colored area will be found on the surface. For like reasons the entire absence of the peripheral blood space before or after fixation might give a whole node a grayish color, or if absent over but a part of the node it might result in an appearance which might suggest that one portion has the character of a hemolymph and the other that of a lymph node, or that there are mixed or composite nodes. Besides these factors, still others, to be discussed later, have an important bearing upon the question of external appearance.

Exposure of hemolymph nodes to carbon dioxide, on the contrary, never produced the slightest visible changes in color. Such as were chocolate-colored when exposed to this gas remained so. The same was true if they were of any other shade. But if nodes thus exposed for a short time were still sufficiently fresh, subsequent exposure to oxygen would result in a change to the usual bright-red color of freshly coagulated blood. Exposure of fresh hemolymph nodes to gaseous hydrogen sulphide in pure or mixed form, or to weak or concentrated solutions of the same in water, in alcohol, and to an ammonia-alcohol mixture containing hydrogen sulphide would, on the contrary, invariably result in a rapid change to an intensely black color. It was also noticed that exposure of cut nodes in water saturated with hydrogen sulphide caused a more rapid change to a deeper black than exposure in a solution of 80 per cent alcohol similarly saturated. Since the latter solution contains much more hydrogen sulphide than the former, it is apparent that the slower and less pronounced color change in nodes immersed in it is probably due to the effect of shrinkage and hardening, and perhaps also to the dehydrating effect of the alcohol. If they were exposed to the action of diluted instead of concentrated gaseous hydrogen sulphide, a very gradual change to green followed that to black, thus giving the nodes a grayish color, as described by Warthin [36]. Furthermore, if the freshly cut surface of a node was thus exposed, these changes were much more rapid, and the green was frequently so deep that it simulated black. Solutions in water of hydrogen sulphide and of the yellow ammonium sulphide, in various concentrations had a similar action. However, if immersion of the nodes in a solution of sulphide, free from oxygen, was complete, no change from black to green took place at all. The black color remained permanent, and was retained in the alcoholic hardening solutions, as well as in all later processes. These facts suggest, of course, that the change from black to green is indeed an oxidation change of some sort; which conclusion is further confirmed by exposure of nodes to pure hydrogen sulphide, with subsequent exposure to pure carbon dioxide or to oxygen. Nodes kept in pure hydrogen sulphide, or subsequently exposed to carbon dioxide, remained black for days.

As in the case of the color changes due to oxygen, the color change due to these pure gases or mixtures of them was a very superficial one, even after prolonged exposure—for six to eighteen hours—to either gaseous hydrogen sulphide or to a solution of the same. Such exposure never resulted in a color change beyond the depth of one or two millimeters, even on the surface of a freshly-cut node. At greater depths into the node the original color was retained, even for twenty-four hours or more, until maceration and putrefactive changes produced the usual results. The same was true regarding the apparently permanent green color which followed the change to black. If fresh nodes or pieces of the same were immersed in 95 per cent alcohol saturated with hydrogen sulphide, they would undergo the usual color changes; but after weeks or months of immersion it was found that both the black and the succeeding gray color had completely disappeared, so that the tissue had the customary gray color characteristic of lymph nodes or of lymphatic tissue fixed in pure alcohol. This change in color occurred even if the alcohol, at the time when the tissue had lost the black color which was acquired through exposure to hydrogen sulphide, *still contained hydrogen sulphide in considerable quantity*. Sometimes the alcoholic solution contained a small quantity of a dull black deposit after the nodes had lost the black color. This deposit or precipitate, which appeared only after weeks of immersion, was finely granular, and quickly sank to the bottom after shaking.

The action of hydrogen sulphide was comparable to that of oxygen, then, in that its penetration was merely a superficial one, though the color change was apparently more rapid in the case of exposure to hydrogen sulphide than to pure oxygen. This was true, both when a change from dark venous to red, or from a sulphide-produced black to a green color, was concerned; and it may be *possible,* as has been suggested, that the jet-black color of nodes, occasionally found *post-mortem* in sheep, may be due to the action of hydrogen sulphide formed in decomposition (?) or from other tissue changes.

In writing of the color changes following exposure to hydrogen sulphide, Warthin [36] stated that "The important point is the fact that in the hemolymph nodes there may be such a quantity of iron-containing pigment that these nodes may take up hydrogen sulphide and become grayish or black in color, *while the spleen remains unchanged.*" (The italics are the writer's.) Warthin further stated that the combination of hydrogen sulphide and iron is probably the cause of pseudo-melanosis, and added in a footnote that "The exposure of hemolymph nodes obtained from cattle and sheep produced results exactly like the autopsy findings in the above cases. The nodes quickly became discolored, some becoming uniformly grayish-black or brownish-black, others becoming spotted or streaked. The discoloration thus produced lasted for a longer time than that seen in human autopsy cases." The color changes reported by Warthin have been confirmed only as far as gross appearances are concerned, for frequent microscopical examination of nodes which had turned black spontaneously or upon exposure, never revealed a picture of pseudo-melanosis, nor was a single test for iron in either the ferrous or ferric forms ever positive. But I am well aware that these tests may not be relied upon with certainty, and, moreover, that the iron may be in the organic form and hence nevertheless present. Consequently, it might still be true that the change from red to black which is produced by exposure of nodes to hydrogen sulphide, although not directly attributable to, might yet be accompanied by the presence of an excess of iron in hemolymph nodes. Although Warthin's conclusion regarding the excess of iron in hemal nodes relies partly upon these color changes, it is interesting to report that the fresh blood of any animal turns black almost instantly on exposure to hydrogen sulphide. Evidently, then according to Warthin's reasoning the blood of a number of domestic animals must contain more iron even than the hemolymph nodes of these same animals: a conclusion in direct contradiction to that of Warthin. Moreover, it was found that not only the blood, but also the ***spleen,*** muscle, liver, blood vessels—in fact any fresh vascular tissue—would undergo identically the same color changes, and do so even more rapidly in some cases than the hemolymph nodes themselves. From these observations it is clear then that the hemolymph nodes very likely undergo these color changes when exposed to hydrogen sulphide, simply because they are very vascular; and not necessarily, as assumed by Warthin, because they contain an excess of inorganic iron. To be sure, Warthin may be correct in assuming that it is an iron compound which produces these changes. That is not denied here. What concerns us is whether or not these color changes necessarily indicate a greater content of iron on the part of the hemolymph nodes. That this is not the case the facts cited seem to establish beyond all question. To be sure, if, as has been claimed, hemolymph nodes are the seat of blood destruction, with resulting decomposition of blood pigment, it is possible, of course, that they do contain a large or even a larger amount of iron; but the above action of hydrogen sulphides is manifestly not a satisfactory criterion. Moreover, in another article Warthin [32] contradictorily enough reported that he found but a slight or no reaction for hemosiderin in hemolymph nodes. The latter observation, which is contradicted by some investigators, agrees entirely with the findings of the writer; and it seems possible, although perhaps not entirely probable, that differences in the freshness of the material may at least in some measure account for these discrepancies. v Schumacher [27] also emphasized the rare and sparse occurrence of pigment in the hemolymph nodes of sheep.

Although there are great variations in the quantity of blood contained in hemolymph nodes, their vascularity, as judged by external appearances, did not seem to be affected by the rate or thoroughness of bleeding during slaughtering. In sheep which were bled slowly from one carotid or jugular only, or in others which were bled rapidly from both carotids and jugulars by severing all the ventral soft parts of the neck, the nodes were always found turgescent. If death occurred without bleeding, there was no marked difference save that the veins draining the nodes seemed a trifle fuller, and the color of the nodes a little darker; which latter fact may perhaps be accounted for by defective aeration of the blood during death. This failure of hemolymph nodes to become paler during death by bleeding stands in striking contrast to what is noticed in many lymph nodes. v Schumacher [27] also emphasized the effect of bleeding upon the color of lymph nodes and pointed out that lymph nodes in foetuses in which free bleeding is secured by severing the cord, are always much paler than those in foetuses which are killed without such bleeding. The significance of these differences in behavior between hemolymph and lymph nodes will be discussed in connection with the circulatory condition in the nodes.

Since the vein draining a node is usually dilated with blood, it can frequently be seen without difficulty on inspection. In almost any carcass one or two nodes can be found the veins of which are plainly visible from five to ten centimeters or more from the node, even if the latter is only a few millimeters in size. Anastomoses with the veins from adjacent nodes are quite common. The artery, on the contrary, is not seen on inspection alone, no matter how turgescent or large the node, or how prominent the vein. Pressure upon the nodes generally results in rupture, without visibly dilating the vein or the artery or decreasing the vascularity of the node. This inability to force out the blood by means of external pressure on the nodes was quite puzzling, until the peculiarities of their structure supplied an explanation.

Lymphatic and Vascular Relations

Lymphatic vessels were never detected or dissected out in the hilus of a hemolymph node however large, although it was often an easy matter to see and find them near a lymphatic node of much smaller size. Frequently lymphatic vessels of varying calibre and conspicuousness could be seen near hemolymph nodes, or even in contact with them; but even in the case of very large nodes no communication was ever noticed between them and the nodes, upon the most careful examination. Hence these observations confirm the conclusion of Weidenreich [37] in this regard and contradict Helly's [11] statement to the effect that lymphatic channels can be seen to enter the hilus of the hemolymph nodes, although not found within the node, and that nodes which lie near large lymphatics contain such vessels. Aside from the difficulty, or impossibility even, of seeing a hilus macroscopically in most of these nodes, it is well to remember in this connection that Helly did not state how the lymphatics were identified positively as such. Moreover, small lymphatic channels might be confined wholly to the capsule of the node or its large trabeculae without necessarily establishing any charasteristic connection with the parenchyma of the node itself. Helly's conclusions and observations are largely confirmed, however, by Forgeot [6 and 7] and v Schumacher [27]. The former described nodes in the lumbar region of goats and sheep, and under the pleura and pericardium of cattle, from which blindly-ending lymphatic vessels of varying form extended. In some cases these vessels returned to the neighborhood of the node and were markedly distended with red lymph. The several vessels were found to end blindly independently, or to be joined into a network which surrounded a node the main branches from which formed a common trunk, which also ended blindly. An examination of Forgeot's articles show very clearly, however, that he has included "red" or hermorrhagic lymph nodes, *i. e.*, lymph nodes with erythrocytes in the sinuses, among hemolymph nodes, an error against which v Schumacher rightly warns, and which has undoubtedly been responsible for much of the confusion. Nevertheless v Schumacher, who largely accepted and confirmed the conclusions and observations of Helly and Forgeot, basing his conclusions on an examination of adult and embryological material from the sheep, emphasized the fact that hemolymph nodes usually lie in the neighborhood of large lymph vessels, and that branches of the latter frequently extend considerable distances into the capsule without piercing the latter or coming into relation with the marginal sinus. Sometimes such lymphatic vessels were, however, seen to join the sinus, and these nodes v Schumacher excludes from hemolymph nodes, on the opinion of others. Nevertheless v Schumacher proceeds to state that all manner of transition forms between lymph and hemolymph nodes exist as far as the relation of the lymphatics to the nodes are concerned, and describes nodes with lymphatic vessels in process of obliteration in different places within and without the nodes, much as Helly has done. v Schumacher also came to the conclusion that hemolymph nodes are only rudimentary or undeveloped lymph nodes which have lost their connection with the lymphatic system as a result of the obliteration of the lymphatics at various points. Consequently, according to v Schumacher, a lymph node may become a hemolymph node by losing its lymphatics, and can again become a lymph node by regaining them. Since these conceptions and conclusions are based partly upon developmental considerations, they will be discussed especially in a separate article on this subject; but it may here be noted that the conclusion that a true hemolymph node is merely a lymph node devoid of lymphatic vessels and sinuses, is only possible upon a fundamental misconception of the real character of the vascular circulation of true hemal nodes.

These considerations at once raise the question of the relation between hemolymph nodes and the lymphatic system. In order to determine whether a direct connection exists between them, injection methods seemed to offer the best and perhaps the only positive proof. Since an abundant supply of material could be found in the carcasses of sheep, the abattoir again suggested itself as an especially good field for this work. Hence many hundreds—thousands—of injections were made directly into the nodes upon the fresh carcasses. Occasionally this was within ten minutes or a quarter of an hour after death. The results obtained by means of puncture injections with a hypodermic syringe into the nodes practically undisturbed *in situ* in the lumbar region, were surprisingly uniform. As node after node on the hanging carcasses was punctured and injected, the invariable result of the injection of a few drops of methylene blue, Prussian blue, India ink, etc., was the almost immediate appearance of the fluid in the *vena cava,* or occasionally in the common iliac veins. Since the appearance of even a fraction of a drop of the colored solutions or suspensions quickly became evident in the collapsed veins, it was, to be sure, an easy matter to decide between success and failure. To avoid error many hundreds of injections were made into nodes of various sizes, shapes, colors, and positions in the abdominal and thoracic cavities of sheep from a few weeks to four or five years old. By far the greatest number of these injections were made on the lumbar group, however.

v Schumacher, who agreed with Weidenreich and the writer as to the injections of the vein by means of puncture of the node, however, emphasized the fact that he obtained such a result by no means in every case, but only when one of the intra-nodal veins was pierced. In numerous instances v Schumacher found that only the sinuses in the interior of the gland were filled, and whenever the vein leaving the node was injected v Schumacher says he could always tell by serial sections that a *vein* in the interior of the gland had been punctured by the needle, so that the injection mass could pass directly into the large collecting veins at the hilus.

I am at a loss to account for v Schumacher's failure to inject the veins of hemal nodes in practically all cases by means of puncture of the node. To be sure, the choice of nodes is of primary importance, and no one can be positive that he has selected a hemal node if he fails to inject the vein or lymphatics. Besides, no one will doubt that a *venous radicle* must have been penetrated by the needle or its wall penetrated by the injection mass, if the vein leaving the node is filled; but after examining numerous nodes which had been injected by puncture, I must entertain the gravest doubts as to the possibility of determining the exact point of puncture of a venous lacunae. For even the smallest needle or capillary glass tube bears a marked disproportion to the size of the numerous venous radicles in a node. Besides, it would be likely to pierce so many —or none—for most of the hemal nodes are small, as v Schumacher rightly emphasizes. Hence locating the exact point of puncture of the wall of a particular venous lacuna through which the injection mass is supposed to have entered, must be open to serious error, even if possible. Moreover, veins are not always present within a node; venous lacunae or sinuses take their place frequently.

It was generally very easy to see the injected fluid pass from the hemolymph node to the *vena cava,* pushing the blood in the vein leaving the node before it. As more fluid was injected, a steady stream, sometimes inter-mixed with blood and bubbles, could be seen passing to the *vena cava* or the iliac veins. Frequently the injected fluid would pass in a somewhat roundabout way to reach its destination in the large veins; and occasionally it would leave the node in two directions from the same or from different points. Clamping of the vein on its way to the *vena cava* led to rupture of the node upon further injection, but not to the injection of lymphatics. Anastomosing veins would occasionally become filled with fluid; but several times only did an adjacent or distant node seem to change its color very slightly. For a time this inability to inject one node from another in the fresh hanging carcasses was very puzzling, for it was evident that the veins from several nodes not infrequently joined on their way to the *vena cava.* Besides, it will be recalled that Weidenreich [37] reported that it was easy to inject a node from a neighboring one. This apparent contradiction of Weidenreich's results was emphasized further by the fact that it was never possible to inject secondarily smaller hemolymph nodes which lay in actual contact with the larger ones, from which the injection was made. This was true, even when it was afterwards found by injection of differently colored fluids from the individual nodes concerned that they were drained by branches of the same vein. Naturally the fact that small veins draining hemolymph nodes are usually full of blood, suggested that the failure to inject one node from another probably was mainly due to the presence of blood, and to some condition within the nodes which prevented a re-flow of this blood to the arterial side. Such conditions alone, it seemed, could explain the above facts, for a system of filled tubes could naturally not receive more fluid without further distention of the vessels of the node, or of leakage or rupture. Consequently, the fat in the lumbar region, including the great vessels, containing especially numerous nodes, was excised *en masse,* as Weidenreich had done. By means of puncture injections of the nodes it was now found a very easy matter to force the injected fluids into adjacent or occasionally distant nodes, even if the flow toward the excised *vena cava* was unobstructed. Hence Weidenreich's observations were easily confirmed by using similar methods. But these results now required an explanation; for why should there be such difficulty in injecting one node from another with the nodes undisturbed *in situ* in the carcasses? Although I have no wholly satisfactory explanation, it is probable, it seems to me, that the manipulation incident to excision of the tissue emptied the veins which drained the nodes, sufficiently to permit the injected fluid to enter. Besides, as shown by the many points of leakage when injections were made into nodes contained in excised tissue, the numerous anastomosing veins which are severed during removal of the tissue also gave opportunity for relief of pressure in several directions. Hence the condition of a system of closed tubes partially or totally filled with fluid no longer existed. It is evident, of course, that it is not essential that the vein which drains a node be completely full of blood to prevent the injected fluid from entering the node, or, on the contrary, that it and the node must be completely empty before any injection mass can enter. All that is manifestly necessary is that a sufficient quantity of blood be contained in the main or in the anastomosing veins to completely fill, or perhaps to sufficiently distend, the venous spaces within the node to make further injection impossible. For in case of a small node even a fraction of a drop of blood in advance of the injected fluid might effectually prevent a successful injection, unless the veins and venous spaces within the node are partially or totally empty. Since these conditions probably obtain more or less in excised tissue, it was possible to inject a series of three or four nodes lying in a row from one of their number, with a few drops of fluid. It was also occasionally possible to inject incidentally a network of minute retro-peritoneal veins—not lymphatics—from nodes in the excised tissue; although such a result was never obtained in the many injections made directly into nodes *in situ* on carcasses. These veins, which after being injected formed a network of the greatest delicacy, were so fine that they were barely visible to the unaided eye.

In a large series of puncture injections, it was never possible to inject a lymphatic vessel or a lymph node from a hemolymph node unless the point of the needle pierced the hemolymph node, thus allowing the injected fluid to enter the retro-peritoneal tissues. A series of puncture injections made into the surrounding tissues and body wall proved equally ineffectual for injecting the hemolymph nodes or blindly ending lymphatics. Both lymphatic vessels and lymph nodes, on the contrary, were injected comparatively easily by either of these methods, and injections into lymph nodes always led to the well-known results. The usually characteristically beaded lymphatic channels were instantly apparent, other lymph nodes were injected, and the injected fluid soon ran out of the cut end of the *thoracic duct* in the cervical region, just as it had previously run out of the *vena cava* in the thoracic region. Nor did the injection of some unusually large—3-4 mm.—lymphatic channels occasionally seen in the lumbar region, result in the injection of anything but lymph channels and lymph nodes. In three carcasses, for example, especially large lymph channels three to four millimeters in diameter lay superficially among a group of hemolymph nodes in the lumbar region. The injection by puncture of methylene blue into these large lymph vessels, even when the thoracic duct had been clamped and lymph nodes on all sides were injected both peripherally and centrally, resulted negatively, as before, as far as injection of hemolymph nodes is concerned, even when high pressure was used. Hemolymph nodes, on the other hand, were never injected, even if they lay side by side with or directly upon or beneath injected lymph nodes; and not a trace of the injection was ever found in them upon microscopical examination.

The facts just cited, together with others to be considered, prove conclusively, it seems to me, that, as maintained by Weidenreich [38], the circulation of true hemolymph nodes, exclusive of the capsule at least, has no connection whatever with the lymphatic system. They prove further that there probably are no nodes of a mixed type having sinuses common to the vascular and lymphatic systems, and that consequently the word hemolymph is a misnomer when applied to these nodes of the sheep. Since, then, all these so-called hemolymph nodes are solely in direct connection with the vascular system alone, and contain no lymph spaces, the designation of hemal node first used by Clarkson [2] is preferable, and will hence be used in this discussion.

Since these results seemed to indicate that hemal nodes are entirely independent of the lymphatic system, injections were also made from the abdominal *vena cava* and aorta, in order to determine whether the spaces found in hemal nodes are in direct connection with these vessels. Such injections were made on two lambs seven to eight months and four to six weeks old, and six foetuses from four to five months old. Three of these lambs were bled to death. In case of the other lamb and the foetuses, some relief from back pressure due to the contained blood was secured by incision of the *vena cava.* Injections of filtered carmine and Prussian blue gelatine were made directly into the abdominal portions of these vessels. The carcasses were kept immersed in warm water and a high uniform pressure (200-250 mm. Hg.) was maintained continuously for a period of one-half to three-fourths of an hour. Besides this, the injection was limited as far as possible to the lumbar region by clamping the main branches of the great vessels. Since the injection mass was thus limited to a small field, the behavior of the hemal and lymphatic nodes could be observed more carefully during the progress of the injection. Although at first it was attempted to mark the site of some of the typical hemal nodes, by transfixing the adjacent tissue with a small pin, the high pressure used on the filtered gelatine caused considerable leakage at the point of puncture, which threatened to obscure the field. Hence this method was abandoned.

Upon completion of the injections, the bodies of the foetuses were cooled, and fixed, *in toto,* in formaline. In case of the lambs, the whole lower half of the body was likewise preserved, in order to leave the area under observation undisturbed. All nodes were later dissected out by means of a lens when necessary, and cut serially in paraffine. It was found advisable to remove all nodes found in a given area, because of the difficulty, or impossibility even, of distinguishing injected hemal and lymphatic nodes *by external appearances.*

During the course of the injection it was disappointing to notice how quickly even the smallest lymph nodes, distant often from the place of injection, would quickly change their color due to entrance of the injection mass, while much larger near-by typical—as judged by external appearances—hemal nodes showed no color change whatever. That this apparent failure to inject the great majority of the hemal nodes was not due to a faulty technique, was shown by the fact that the whole carcasses were so well injected, in spite of ligation of the main branches of the great vessels, that even the small parathymus glands had changed their color and were found on microscopic examination to contain much injection mass.

Before giving a statement of the results obtained by these injections, a rough sketch of the microscopic structure of the more usual hemal nodes seems advisable. In the majority of these nodes, a view of a section made in any plane presents the following well-known appearances. Externally there is a fibrous capsule varying considerably in thickness in the same and in different species, beneath which there usually is found a continuous or, oftener, a discontinuous so-called peripheral sinus, of inconstant width, which generally contains more or less blood and lymphocytes. As a rule, by far the larger area of the node is composed of lymphatic tissue, containing the well-known blood sinuses, or better, blood islands or spaces.*

A definite cortical and medullary portion, or an arrangement of the lymphatic tissue into medullary cords, was never seen. The arteries are inconspicuous as a rule, and the veins frequently still more so. In addition to the inconstant, large central venous spaces in direct connection with veins more or less evident partially collapsed or open spaces, the so-called venous lacunae of Weidenreich may also be present throughout the parenchyma. When evident they are usually best seen near the periphery of the parenchyma, and frequently contain a small number of erythrocytes and lymphocytes, the former often being found in varying states of degeneration. The blood islands and spaces other than the peripheral or subcapsular blood space, and the main arteries, often have a more central position, however; but the veins generally branch soon after entering the node and traverse the peripheral sinus, or better the marginal or subcapsular blood space. Although rarely noticeable throughout the node, the trabeculae are few and small, as a rule. The coarser reticulum is plainly visible under low-power magnification, and is more evident in the partially filled blood spaces, especially in the marginal one. Since this sketch is to serve merely as a basis for a statement of results obtained by injection, a more detailed and accurate statement of structural variations and relations is deferred.

Injections made from the *vena cava,* and by puncture from a node, always gave a very characteristic and uniform result. No matter how little of the injected fluid gained access to the node, it almost always lay as an exceedingly irregular mass, often of minute breadth, which zigzagged about, but small amounts of which were but seldom found in the peripheral or central—in the sense of internal—blood islands or blood spaces. (Fig. 2.) However, if the injection was a fairly complete one, the gelatine mass or the India ink was distributed quite uniformly throughout the node, and some of it was rarely found within the follicles; although instead of penetrating these, it usually surrounded them. In some places, the masses of injected material formed an incomplete and a very irregular circuit, parallel and internal to the peripheral blood space, which was, however, always separated from the former by a very thin barrier of lymphatic tissue. In case of injections of India ink by puncture, the resulting picture was always similar to that obtained by injections from the *vena cava*; but since the puncture injections were generally much completer, a greater amount of injection material was present. In these instances some of it was found in the peripheral blood space (sinus), in some of the blood islands, and not infrequently in some of the follicles as well. These puncture injections, whether made directly into a node or indirectly into an adjacent one, were, of course, also venous injections (figs. 5 and 6). Strangely enough, out of scores of nodes injected from the venous side, only a few showed the injection mass lying in large blood spaces in the center of the node. In two cases of injection by puncture, the India ink also found its way into an artery lying near a vein, wholly outside of a node. In the latter cases it seems likely that the ink entered the outlying artery through accidental puncture of one of its branches within the node, rather than by passing from the larger blood sinuses or lacunae into a capillary or an arteriole and then to the parent trunk. Unfortunately, however, the material at hand does not justify a definite conclusion regarding these rare accidental results.

---

*Since the blood islands are usually masses of erythrocytes contained in the lymphatic tissue, rather than empty spaces temporarily devoid of blood, although such undoubtedly occur, the term blood space might preferably be restricted to the empty areas, which once contained blood islands; and since neither of these nor the peripheral sinus are really such, the term sinus had better be restricted to the dilated venous radicles in direct connection with the circulation.

Carmine gelatine injections from the aorta gave very similar results. (Fig. 7.) If the injection of the node was only a partial one, however—as was usually the case—the injected mass was found mainly in the venous lacunae at the periphery, and to a far less extent near the center of the node. Hence in the case of a complete injection it would be difficult indeed to distinguish an arterial from a venous injection, were it not for the fact that in the former the main arteries and their branches, and frequenly some arterioles and capillaries, are well injected, thus making differentiation comparatively easy. Arterial injections from the aorta also differed from most of the venous injections made by puncture, in the fact that the injection mass seemed to penetrate the filled blood spaces with more difficulty. This result may have been due, however, to the differences in pressure and to interference with the architecture of the node by the puncture in case of direct puncture injections, as well as to other things to be discussed presently. Unfortunately, none of the nodes injected from the aorta had a sufficiently definite peripheral (sinus) blood space to afford good evidence regarding its relation to the arteries. That the injection mass could have entered the peripheral (sinus) blood space follows, however, from the fact that the latter always contains more or less blood. Hence both it and the central blood spaces must, to be sure, communicate in some manner with the vascular system, even if not directly with it as a rule, or with the artery.

The most significant result obtained from these injections was that the so-called venous lacunae or radicles could generally be injected from both the *vena cava* and from the aorta. It is true that these injections were not of equal completeness, and also varied in certain other minor respects; yet the above fact seems to demonstrate conclusively that the venous lacunae, or true venous sinuses of the hemal nodes of the sheep, occupy a position intermediate between the veins and the arteries, and hence bridge a gap between them. However, as already stated, the fact that the blood spaces are more easily injected by puncture than from the aorta, can readily be explained by the fact that higher pressures were undoubtedly used, that a more direct and sudden entrance of the injection mass is effected, that the architecture of the node may be seriously disturbed, and that the needle may happen to stop in the parenchyma, in the case of direct puncture injections. Moreover, in case of injections from the aorta the injection mass, which enters slowly through the artery, can pass directly onward into the wide venous lacunae and large veins, without producing any appreciable back pressure in them, because of the difference in calibre between the arterial capillaries and venous sinuses. Hence the injection is likely to be incomplete. That the injection masses or the pigment, are generally found in the venous lacunae or true sinuses, and not in the blood islands and spaces, is explained by the fact that the former are usually empty spaces, with permanent walls which, although usually in a state of total or partial collapse, are directly connected with the arteries, and hence offer far less obstruction to the entrance of the injection mass than the blood spaces. The latter are traversed by reticulum and are filled with blood which has no easy and free means of escape. Furthermore, the communication between the venous lacunae and blood spaces is, as a rule, only an indirect one.

The great irregularity in shape of the injection masses and the pigments, in both arterial and venous injections, somewhat suggested extravasations. This was probably due to the necessarily incomplete nature of these injections; and that they were not extravasations is shown by the entire absence of points of rupture, and by the identical character of the injection masses in nodes injected indirectly from an adjacent one, under conditions of free outflow to the *vena cava* through the vein common to several nodes. For under such conditions serious structural derangement is avoided, or at least made improbable, because excessive pressures cannot be produced if the entrance of the injection mass is a very gradual and gentle one. The irregularity in form of the injection mass is further accounted for by the fact that the venous lacunae or true sinuses are encroached upon to a varying extent by the surrounding parenchyma, thus offering different amounts of obstruction to the onward flow of the injection masses or fluids; and by the fact that a partial injection of such wide, irregular channels must of necessity vary greatly in calibre.

The partial character of the injections in hemal nodes injected from the arterial side can be accounted for by the fact that the path of least resistance is undoubtedly in the direction of intra-vitam flow. Hence the injection mass can easily enter some empty venous lacuna or sinus, and pass directly into the vein or the larger venous radicles, rather than flow from one lacuna to another, until all or almost all are filled. Consequently it happens that only a sufficient number of venous lacunae may be injected to conduct the injection mass away as fast as it enters through the artery. Since both the arterioles and capillaries, and to a less extent also the venous lacunae, are usually in a state of partial or total collapse and more or less encroached upon by the parenchyma, they naturally offer varying resistances to the injection mass. Consequently limitation of it to certain lacunae is further promoted. The injection of the venous lacunae which lie at the periphery of the node in the lymphatic tissue, directly internal to the peripheral or subcapsular blood space, to the exclusion of those more centrally located, can be explained by the fact that the vein is often in more direct connection with them, as shown in fig. 8; and that as it leaves the node it rarely receives a number of tributaries which encircle the node, pierce the capsule, enter the lymphatic tissue, and open directly into these lacunae near the periphery. The presence of accessory or accessory tributary veins also can explain why only a very small portion of a section of a node may contain injection mass, and why the injected fluid, in case of puncture injections, can rarely be seen to leave the punctured node in several directions.

In those instances of venous injections in which some of the central or internal and the peripheral blood spaces contain injection mass, the path taken by the latter can usually be found easily in numerous places.

These paths apparently always lie through a narrow barrier of lymphatic tissue between venous lacunae and the blood spaces. It follows from this, and from other considerations, that the peripheral and central blood spaces or islands are not necessarily, or even usually, in direct open communication with the venous system in many nodes. Hence it is easy to understand why color changes are not more manifest in hemal nodes during the progress of injections from the *vena cava* or aorta or during bleeding, and why pressure exerted upon isolated excised nodes does not empty the filled blood spaces. Moreover, it also helps to explain why, in case of puncture injections, the injected fluid is usually seen in the *vena cava* before any recognizable change in appearance of the node takes place, if the injection is made slowly enough. The probable correctness of this explanation is further confirmed by the results obtained by injection in series of a number of nodes lying in a row in excised tissue, by puncture from the largest of them. When, for example, nodes 1, 2, 3 and 4, having a common effluent, were injected with India ink from node 1 under a free outflow, a sequence of events was observed as follows. The vein draining the adjoining nodes and tributary to the vein draining node 1, also became filled. Now if these nodes and their veins form a series of decreasing size, the resistances offered to the inflow of ink necessarily vary; and hence it may happen, as was actually the case, that node 2 becomes injected before, and more completely than nodes 3 and 4. Consequently, node 2 showed external color changes, while 3 and 4 did not do so, or did so but slightly. On cutting such an injected series, it was found that in node 2, which had turned black, the ink had penetrated into the peripheral and some of the central blood spaces, as shown in fig. 6. In node 3, on the contrary, which had undergone no color change, the ink was confined entirely to the venous lacunae or true venous sinuses; while practically no ink at all had entered node 4, which had likewise undergone no color changes. It is evident, however, that an outward change in color would occur in all nodes, whether they contained a peripheral blood space or not, if a sufficient quantity of the injection mass penetrated the node.

It follows, from these facts, that it is generally very easy to distinguish between an arterial and a venous injection from sections of injected nodes; and I fail to see why Drummond declared it to be impossible to do so. This would be true even in the case of a venous injection, in which the lacunae, the blood spaces, and the veins were entirely empty before injection; for in such a case the arteries would remain uninjected, which would not be the case if the injection had been made from the arterial side. It is usually just as easy to distinguish an injected hemal from a lymphatic node injected from the vascular system; unless, perhaps, some difficulty might be experienced in case of a lymph node in which extravasation of the injection mass into the parenchyma or lymphatics had occurred. For, aside from the fact that small lymph nodes readily manifest color changes, the injection mass as a rule entirely fills the arteries or veins, is not at all or but slightly mixed with blood, is confined in vessels of regular calibre with closed walls, and consequently has not those irregular outlines characteristic of injections in hemal nodes. Moreover, vascular injections of the lymphatic nodes always show a very characteristic arborization, (fig. 9), the distribution of the injection mass throughout the specimen is quite uniform, and the capsule is rarely also surrounded by a network of fine injected capillaries, a veritable *retia mirabilia*. It should be mentioned in this connection, however, that Weidenreich [37] stated that the vein, and especially the artery, frequently branches as it approaches the hilus of hemolymph nodes, sending branches to the capsule and thus giving the whole a very artistic appearance, which may cause confusion in embryonic nodes.

These differences in the behavior of hemal and lymphatic nodes upon injection can easily be accounted for, it seems to me: for in the lymph nodes the injection mass merely has to penetrate permanent channels of gradually changing calibre, lined throughout by endothelium and surrounded by tissue, which can easily yield, because the lymph sinuses, which form a comparatively large portion of the total volume of the node, are easily compressible. In hemal nodes, on the contrary, the injection mass, instead of traversing a closed permanent system, must apparently traverse very irregular, often collapsed, and no doubt to a certain extent discontinuous because evanescent, channels of greatly varying calibre, which often have but minute inter-communications, and which also communicate indirectly with the blood spaces of the node. It is obvious, to be sure, that improvements in technique may invalidate some of these statements, but they are in harmony with results obtained with all solutions, suspensions and masses used in the present series of experiments.

Although the artery and vein generally enter the node together, in external form the hemal nodes of the sheep are usually oval or spheroidal, and, as previously stated, without a definite hilus. It is true that the larger nodes generally have a more definite hilus, but accessory veins usually do not have accessory hiluses. After piercing the capsule, the artery and vein generally part company at once, and only exceptionally traverse the substance of the node as contiguous structures. (Fig. 10.)

The artery branches frequently, as it penetrates deeper into the node, the smallest branches usually being found easiest near the periphery. Although the arteries can only rarely be seen opening directly into venous lacunae, they can frequently be seen in the lymphatic tissue near them. Since the smallest arteries, arterioles, and the capillaries are practically always empty and collapsed, identification of the capillaries is necessarily difficult. Rarely an artery can be seen to traverse a small node, branching as it does so, and leaving the node approximately opposite to the point at which it entered, with apparently the same calibre. (Fig. 11.) It is evident that such variations of the vascular system of the node as these can also easily account for a number of anomalous results obtained in the course of injections.

Immediately after piercing the capsule the veins, on the other hand, often communicate by means of very wide openings directly with the extensive venous lacunae which lie parallel to the peripheral (sinus) blood space, when present, near the outer border of the lymphatic tissue; but they can only rarely be seen to communicate with the subcapsular or central or internal blood spaces of the parenchyma. (Figs. 8 and 10.) Less frequently they can also be seen to communicate directly with the deeper-seated lacunae, and with large blood spaces in depleted nodes. Accessory veins, which were clearly tributary to the peripheral (sinus) or subcapsular blood space, and hence affluent veins, were occasionally found, however. (Fig. 12.) In some nodes, on the contrary, it was impossible to detect the presence of a single vein or venule within the node itself, although serial sections were made. This was found to be the case even when numerous sections of arteries and arterioles could be found. This fact, and the entire absence of injected veins within some nodes, can be accounted for by the fact that in some cases the veins apparently come into relation with the peripheral venous lacunae only. Consequently, in the absence of the peripheral (sinus) blood space they can be seen only where they pierce the capsule. Moreover, in some cases the trunk of the vein does not pierce the capsule at all, but merely comes into contact with it in such a way that communication with the intranodal circulation is effected by means of an opening in the adjacent wall of the vein, the node appearing to be sessile upon the vessel. Since no separate vascular trunk exists between the node and the tangent vein in these instances, the near wall of the latter might be thought of as being continued through the capsule, and forming its venous circulation. As in case of the artery, however, so the vein in rare instances may run nearly through the center of the node, communicating directly with the venous lacunae as it penetrates deeper and deeper into the lymphatic tissue, apparently without the intervention of venules or capillaries.

The above considerations and observations seem to indicate quite clearly that the blood which enters a hemal node, wholly devoid of blood islands and a peripheral (sinus) or subcapsular blood space, through the artery, passes through arterioles and capillaries directly into the venous lacunae or true sinuses. From here it may, in some cases at least, at once enter the larger central venous spaces, if present, and hence pass directly to the vein; or it may in the absence of a main intra-nodal vein enter the efferent vein directly from the lacunae. Since in the above case the absence of blood islands and blood spaces has been assumed, the relation of these structures to the circulatory conditions will be considered farther on. Consequently the only thing open to question in the above premises is the manner of termination of the arteries, their relation to the blood spaces or areas when present, and to venous lacunae, and the relation of the latter to the vein. That the arteries end in capillaries, is easy to demonstrate; but it is very difficult to demonstrate satisfactorily that these capillaries communicate directly with the venous lacunae, except experimentally. The presence in arterial injections of the injection mass in the lacunae is, of course, alone sufficient evidence to establish a direct connection between the latter and arteries; but it must be admitted that the actual demonstration of a direct continuation of an injected capillary into an injected lacuna is only very occasionally possible. This fact may, to be sure, be accounted for by the contractility of the small arterial endings, and especially by shrinkage of the node, as a result of which the injection material contained in the fine arteries is forced out into the relatively very much larger venous lacunae. The direct communication of the lacunae with the larger venous spaces, or with the veins, can, however, be seen easily, and can be demonstrated satisfactorily in both injected and non-injected specimens, even in the case of some very depleted nodes. Since the lacunae form a venous plexus of widely varying calibre, which must usually be many times the volume of the arterial tree, a decided disproportion between the size and volume of a capillary and the lacunae into which it empties naturally exists. Consequently it is evident that a decided slowing of the blood current must also take place here.

Although all attempts to demonstrate the existence of an endothelial lining in the lacunae by means of silver stains have so far been futile, it cannot be doubted from microscopical examination of the ordinary specimens alone that such an endothelium exists. For, except at points here and there where small gaps are found, the injection mass of India ink is always retained by a very definite wall. The existence of discontinuities in the walls of the lacunae can, however, also be demonstrated microscopically, and is further proven by the escape of some of the injected pigment or gelatine mass into the surrounding lymphatic tissue in specimens in which extravasations can be excluded because they were injected under conditions of a free outflow. This is true no matter how carefully the injection has been made. In many places a communication of the lacunae with the surrounding parenchyma is further suggested by the arrangement of the lymphocytes and erythrocytes in portions of empty or partially empty lacunae. In some instances a number of lymphocytes and blood corpuscles are so arranged as to suggest that they are entering the lacunae from the parenchyma. The peculiar disposition of these cells may be a purely accidental one, to be sure; but the comparative frequency of these very suggestive cellular arrangements would seem to imply that this is not the case. If these appearances were due to damage done to the specimens, it would be impossible to explain why the walls of the lacunae always curve gently outward and disappear among the surrounding lymphocytes, rather than ending abruptly and projecting into the interior of the lacunae and giving the appearance of torn ends. Moreover, there is nothing in the distribution of the pigment that suggests an explosive rupture, such as is frequently seen in case of extravasations.

It is to be remembered in this connection, to be sure, that since considerable quantities of erythrocytes are frequently found in the parenchyma and sinuses of lymph nodes, these must have penetrated not only the walls of the blood vessel but those of the lymph sinuses as well, in so far as they did not enter the latter through the afferent lymphatics. However, there is a marked difference in appearance of the parenchyma of hemorrhagic lymph nodes and typical hemal nodes; and no matter how the presence of erythrocytes in lymph nodes may be explained, it seems highly improbable to me that their presence in hemal nodes can be similarly explained. Helly concluded that hemorrhages are responsible for red lymph nodes, while v Schumacher reiterated with increasing emphasis that in both hemorrhagic lymph nodes and hemal nodes the erythrocytes likely enter the sinuses and the parenchyma through places in the walls of veins and capillaries which have been weakened by the passage of lymphocytes. Neuman thought the walls were weakened by disease. v Schumacher also explained the presence of extravasations of injection mass in the parenchyma of lymph and hemal nodes in this way, and concluded that the vascular system of hemal nodes, *i. e.*, of nodes having no lymphatics and containing much blood, is a closed system, as is the case in lymph nodes. v Schumacher based this conclusion on the fact that the injection mass by no means always enters the parenchyma of hemal nodes, and that it occasionally does so in lymph nodes. Hence he rules out all the instances where injection mass is found outside of the circulation, but only denies the existence of a *regular* communication between the blood vessels and blood spaces.

Attention was called to the fact that there is a decided difference in the frequency and nature of these extravasations in hemal nodes, and that microscopical evidence of the communication between the venous sinuses or radicles and the parenchyma is not wanting. Hence, in short, the circulation of hemal nodes is similar to that of the spleen, and not to that of lymph nodes. I cannot believe that the openings in the venous sinuses are purely accidental, or that all the erythrocytes entered the parenchyma of hemal nodes at places which lymphocytes had previously weakened. Moreover, I fully agree with Weidenreich in regarding the spleen as only a higher (?) type of hemal gland. Schmalz, too, thought hemal glands may be designated accessory spleens.

Since it has been entirely impossible to demonstrate a direct communication between the arteries and the blood islands or spaces, it appears to me that these communications between the lacunae and the parenchyma must be regarded as affording the only means of entrance of the leucocytes of the node into the circulation; except, of course, by passage through the wall, as in lymph nodes, and through a free communication between the peripheral blood spaces and the veins, which occasionally exists in depleted nodes. That this statement necessarily needs modification to suit the conditions existing in seriously depleted nodes, is evident, of course. Furthermore, the fact that the blood spaces—blood islands including the peripheral blood space—always contain reticulum and have no bounding wall, while the venous lacunae and venous spaces never contain reticulum but always have a definite wall, also seems to imply that the latter represent definite permanent channels whose endothelium cannot well be co-extensive with the reticulum, and which are in direct relation with the veins. Hence the conclusion that all the lymphatic tissue and the included blood islands and blood spaces lie wholly outside the continuous circulatory system as a rule, seems entirely justified. But, whatever the relation of these structures to the circulation of hemal nodes, being inconstant and transient, they manifestly cannot be regarded as forming an integral part of a system of continuous endothelium-lined channels. The so-called venous sinuses, *i. e.*, the subcapsular or peripheral blood space as well as the central or internal blood spaces, are, on the contrary, not bounded by a definite wall, and their contents are directly continuous with the parenchyma of the rest of the node. v Schumacher too called attention to this fact, and believes that the wall of the sub-capsular blood space, which he regards as having been a true marginal lymph sinus developmentally, was probably incomplete from the beginning. Consequently then, these fluctuating vascular areas could be regarded as spaces resulting wholly or in part from a depletion of the parenchyma of the node, with subsequent or, perhaps better, simultaneous substitution of blood cells. Hence these areas can continue to exist only as long as the withdrawal of lymphocytes from the node into the circulating blood exceeds their proliferation within the node. Moreover, if the existence of a definite endothelium continuous with that of the lacunae would have to be assumed for the central and peripheral blood spaces, then it would be difficult indeed to explain why the blood corpuscles are frequently distributed quite uniformly among the lymphocytes throughout the whole node, and how such endothelial walls could so rapidly accommodate themselves to the comparatively rapid and very extensive fluctuations in size which they would be compelled to undergo in response to increase or decrease of the hemal areas. Furthermore, it would be still more difficult to explain why the injection masses become distributed irregularly in all directions among the cells of the parenchyma as soon as they pass out of the lacunae, and why the vein draining a node can never be shown to open directly into the subcapular blood space at the periphery, and can only rarely be shown to communicate indirectly with it through the intervention of blood spaces or blood islands in the interior. Such a supposition would require that the peripheral and central blood spaces must be thought of as extensive dilations which are practically coextensive in many cases with the node itself, and which communicate with the lacunae by very narrow channels. It would then also be necessary for all the lymphocytes to pass through this wall of endothelium before they could enter the circulation; and, on the other hand, the blood corpuscles would likewise have to penetrate the same wall upon entrance to and exit from the parenchyma of the node; and the only alternative to this assumption is that both arteries and veins end freely in the parenchyma—for which I can find no evidence. I fully realize that the circulatory conditions as assumed above supply no reason for the migration of lymphocytes into the blood, and that they do not account for the occurrence of gaps in the walls of the lacunae. Yet the conclusions reached are no more invalidated by these considerations than the current and more or less accepted statement regarding the circulatory conditions in the spleen is invalidated by similar considerations. To be sure, a purely mechanical explanation is not suggested as adequate or final; but since this conception not only harmonizes with the observed facts but quite satisfactorily accounts for most of the difficulties, it seemed justified.

In the assumed case, then, in which practically all of the node is formed by a mass of lymphatic tissue containing a few blood cells, the supposition would be that there is a very slow movement of lymphocytes from the parenchyma into the blood stream, and a correspondingly slow, though not necessarily a purely passive movement of the blood cells in the opposite direction. Wherever local depletion of the parenchyma occurred blood islands and blood spaces would naturally form; and whenever a more or less general or local depletion of lymphatic tissue took place along the periphery of the node, a continuous or discontinuous peripheral blood space could also result. It is, of course, also probable that the accessory affluent veins sometimes present, may be in part responsible for the formation and persistence of a more or less continuous peripheral blood space, and that rapid depletion of the lymphatic tissue of the node might result in decreasing the size of the node. However, since it is unlikely that the capsule and framework of the node can accommodate themselves rapidly to the altered conditions, an opportunity would be afforded for blood to occupy the depleted periphery and so form a peripheral blood space. Since the lymphocytes must be carried away by the blood stream, they would of course have a tendency to gather about the venous ostia of the lacunae, thus explaining the occurrence of remnants of the lymphatic tissue about empty lacunae and near the periphery in depleted nodes, although it is unlikely that a purely mechanical explanation is adequate. In depleted nodes the more or less stagnant blood may then undergo degenerative changes; and, since the fragments of the erythrocytes can probably pass out easier with the lymphocytes than the intact cells, the presence of granular deposits in the lacunae would also be accounted for. If, in addition, it be recalled that some of the openings into the lacunae are undoubtedly obstructed partly or wholly by collapse of their walls through encroachment of the lymphatic tissue, the correctness of the above supposition regarding the post-embryonic genesis of such inconstant and transient structures as the blood spaces and blood islands is made still more probable.

It is interesting to recall in this connection that Weidenreich [37] considered the blood as passing through the parenchyma between the blood spaces and lacunae under ordinary conditions, but assumed that under extraordinary circumstances it traversed a system of arterioles which form a direct passage between the blood spaces and the lacunae, and which he regarded as playing the role of a self-regulatory system. According to this conception, for example, if for some reason the pressure within the node becomes too high, this system of arterioles is supposed to be thrown open automatically until conditions of normal, or at least of a reduced pressure, again obtain. Even granting the existence of such a self-regulatory system, I have been unable to confirm either the occurrence of arterioles uniting blood spaces and venous lacunae, or the occurrence of the thickenings in the walls of capillaries by means of which this regulatory function is supposed to be effected. Moreover, it is more than likely that if such connecting arterioles existed in any number one might reasonably expect the blood spaces and these arterioles, rather than the lymphatic tissue between lacunae and blood spaces, to become injected. This is, however, not the case.

If the calibre of an artery supplying a node is compared with the area of the intra-nodal venous system, it is evident that the intra-venous circulation must of necessity be a very sluggish one, although increases in pressure might nevertheless slightly accelerate the intra-nodal current. This would of course be true, even if not nearly to the same extent, whether the circulation is a closed or an open one. This supposed sluggishness of the current is confirmed by the results of injections from the aorta, for it will be recalled that small lymph nodes manifested color changes almost instantly, and that the finest capillaries were later found to contain injection mass, while many of the hemal nodes remained uninjected, and only a few manifested slight color changes. Consequently it seems to me that if arterioles connected the blood spaces and venous lacunae, one might reasonably expect them to become injected, even if not as readily as the capillaries in lymph nodes. Besides, if the arterial capillaries opened directly into the parenchyma, or if other than indirect communications between the blood spaces and lacunae existed, it would be difficult indeed to explain why blood should accumulate within the node, as it usually does. It is also evident that if the disposition of the vascular circulation in hemal nodes were comparable to the lymphatic circulation in lymph nodes, it should not be so exceedingly difficult to inject hemal nodes from the aorta; for the ease with which lymph nodes can be injected from the periphery, and the speed with which they manifest color changes are, of course, striking. Hence it seems to me that these considerations alone suffice to establish the fact that the relation of the peripheral and central blood spaces to the veins of hemal nodes must be essentially different from that of the lymphatic vessel to the peripheral and central sinuses of lymph nodes.

THE MICROSCOPIC STRUCTURE

Under low-power magnification a hemal node in section may show nothing but a thin capsule containing a solid mass of lymphoid tissue with few or no follicles or trabeculae, and with but a sprinkling of barely noticeable erythrocytes. Or, on the other hand, it may look like a sac filled with blood in which the coarser framework of the node is revealed here and there, but with only a few small masses of lymphoid tissue with or without lacunae containing some blood cells and granular detritus. In short, then, the appearance of a hemal node on section may be similar to that of a section of sheep's spleen without Malphighian corpuscles and few erythrocytes and but few and small trabeculae, on the one hand; or that of a sack of blood containing a few small islands, or merely scattered lymphocytes or groups of them lying near small connective tissue trabeculae, on the other. Rarely, too, one finds a practically empty node containing but little lymphatic tissue surrounded by scattered erythrocytes and enclosing wide-open spaces; the venous lacunae of Weidenreich, containing some granular detritus and degenerated blood corpuscles. Between these extremes literally every conceivable gradation is found. The cross-section, for example, may be crowded with follicles (figs. 6 and 14) which encroach on each other, on the blood islands, and even on the peripheral (sinus) blood space; or, perchance, they may be absent altogether (fig. 15). A classification of follicles into definite types, as reported by Vincent and Harrison [28], was never possible; and such differences as were observed were structurally of a very minor character. A like inconstancy is found in case of the empty venous lacunae found in the parenchyma, which are frequently very conspicuous in nodes containing much blood but little lymphatic tissue. (See figs. 16 and 17.) It is these spaces, I take it, which have probably been mistaken for lymph spaces.

Equally great variations exist in all the constituents of hemal nodes, save perhaps the capsule and the artery. These are the least subject to variations; although it is evident that in a node which practically represents a sac of blood the original distribution and disposition of the artery must also have been modified very profoundly. It follows, to be sure, from these considerations that a node having neither blood islands nor blood spaces, not even a peripheral (sinus) blood space or evident venous lacunae, may yet be a true hemal node. And, on the contrary, it also follows that a node containing a mere remnant of lymphatic tissue in a mass of blood may also be a true hemal node (figs. 18 and 19). This being the case, it is highly probable that these facts account in some measure at least for the confusion regarding the occurrence of mixed nodes, and possibly also for the contention that a transformation occurs from hemal to lymph nodes, and vice versa. For, as already stated, such a transformation might well be assumed to occur, because an actual series of nodes with but slight structural differences—except circulatory—between the successive nodes, can be formed with true hemal and lymph nodes, as extremes. In such a series it would be entirely impossible to differentiate many of the intermediate nodes from external appearances, or by a cursory microscopic examination; and it should be remembered that injection methods alone made positive identification possible in many cases of these *apparently transitional forms.*

In those nodes in which the blood corpuscles were not intermingled more or less uniformly with the parenchyma, they formed masses which contained some lymphocytes, especially at the periphery of the masses. These local accumulations of blood-cells—blood islands—vary in size from small groups of cells to larger masses which may compose the greater part of the area of the node. There are nodes, for example, containing a single blood island practically co-extensive with the node, and forming perhaps nine-tenths or more of the area of the section (figs. 15, 18 and 19). Others, on the contrary, may contain hundreds of minute blood islands which may nevertheless form but an insignificant fraction of the total volume of the node. When small, numerous and isolated these islands often give a spotted appearance to the cross-section under low-power magnification. If, on the contrary, they are very large, they are often ill-defined, generally irregular in shape, and more or less continuous with each other, with the blood in the peripheral blood space, and with the large central—internal—spaces, if present. A union of the peripheral and more external blood spaces into central collecting spaces was never observed.

It is evident, of course, that a peripheral blood space can exist only when sufficient lymphatic tissue is preserved; for when the latter is greatly reduced in quantity, all boundaries are completely effaced, thus allowing the blood islands or spaces to merge. Hence as more and more of the lymphatic tissue of the node disappears and the total hemal area becomes larger and larger, a stage is finally reached in which the peripheral and central blood islands or spaces merge into an area in which only remnants of the once predominant lymphatic tissue are found. But whether these blood islands in the parenchyma were large or small, the blood was only very rarely found to be in a state of evident degeneration, except in nodes which were largely or almost wholly devoid of lymphatic tissue.

The cellular content of the blood islands did not vary markedly from that of the veins; although at the periphery of the islands, and especially at the inner margin of the peripheral blood space, there were fewer polymorphonuclear leucocytes and eosinophiles, but more lymphocytes. However, in some of the largest blood islands, and in nodes in which blood had so extensively displaced the lymphatic tissue, extremely few lymphocytes were found among the solidly packed erythrocytes.

Eosinophiles were present in the hemal areas in small numbers only, being confined almost entirely to the surrounding lymphatic tissue. In the case of very large blood islands the intermingling of erythrocytes and lymphatic tissue was occasionally so extensive, however, that there were approximately as many cells of the one kind as of the other. However, in some cases most of the blood was found distributed rather evenly among the lymphoid tissue. It seems probable that this condition results from a secondary invasion of the blood spaces by the surrounding lymphocytes, rather than by an invasion of the surrounding parenchyma by erythrocytes, although, to be sure, primarily the lymphatic tissue was displaced by blood cells. No matter what the character of a node, the boundaries between the blood islands and lymphoid tissues were ill-defined, as a rule (see fig. 20). Occasionally, however, a well-defined wall, of rather coarse reticulum, was present between the two (fig. 21). This bounding reticulum between blood islands and lymphatic tissue was seldom very apparent, except in a few nodes which contained so little blood and lymphatic tissue that they were practically empty. In these nodes the lymphatic tissue had been reduced to such an extent that one might rightly speak of islands of lymphatic tissue in a hemal area. As might be expected, however, there seemed to be very little intermingling of the blood and lymphocytes in by far the greater portion of some of these nodes. Moreover, since these walls of reticulum are often similar or identical to the walls of the apparently condensed reticulum seen at the periphery of a follicle, it is possible that the accumulation of blood in the empty reticulum may be an important factor in producing them. This supposition seems to be supported by the fact that they were seldom or only partially present, around very small blood islands. Moreover, whenever the total amount of blood was larger the contiguous surfaces of blood and lymphatic tissue were often indicated by a gently curving line, instead of by a very irregular and ill-defined one. However, here and there a portion of lymphatic tissue of irregular form might nevertheless extend boldly out into the surrounding blood. It is only occasionally that blood islands are found within the follicles; and when so found they are generally small, and never seem to be continuous with those outside of them. Nevertheless their absence rather than their presence here would seem to need an explanation.

In addition to the large venous spaces in direct communication with the vein, usually located near the center of the node, when present, there are small and more numerous ones, termed venous lacunae by Weidenreich [37]. These dilated empty, or nearly empty, spaces are apparently most numerous and conspicuous in nodes which contain much more blood than lymphatic tissue (figs. 17 and 19). Indeed in such nodes they are frequently so numerous, so large, and so devoid of celluar content that they may give an almost fenestrated appearance to a section. In these specimens—and in general, for that matter—they are most evident near the periphery (figs. 8 and 11). In depleted nodes this fact can, to be sure, be easily accounted for by the fact that most of the remnants of the lymphatic tissue are for some reason found in this location (fig. 18); but why they should be more evident here than elsewhere in the more typical nodes (fig. 8) is not so obvious. Although the configuration of these lacunae or true venous sinuses is an extremely irregular one, and although their boundaries are not always well defined, it was nevertheless quite often possible to pass from one lacuna to another, along almost the whole circumference of a section of uninjected nodes. If, however, they were small, their communication, and in fact their continuity with other lacunae, was not so evident, although such communications and continuity undoubtedly existed. This apparent absence of inter-communications between lacunae can probably be explained by the fact that when the walls of the lacunae are in contact it is very difficult indeed, or impossible even, to distinguish the latter from apposed reticulum fibers. Nor does the fact that no lacunae whatever were visible in sections of some nodes which had the appearance of splenic tissue, for example, necessarily imply that none existed; for a hemal node—other than a completely depleted one—without lacunae would seem to be an impossibility, because of the probable or even necessary circulatory conditions which their absence would seem to imply. The absence of lacunae would practically transform the vascular system. Moreover, if the results of the many injections of the venous system of nodes can be used as a criterion, it is certain that lacunae are distributed throughout the entire node, with the possible exception of the follicles; unless, as seems improbable to me, the occasional presence of India ink in the latter can be taken as satisfactory proof of their existence here. Since, of course, the lacunae contain no reticulum, they must, I believe, be regarded as practically permanent structures which are an integral part of the venous system and intermediate in position in the circulation. Many of them persist until the last remnants of lymphatic tissue disappear (fig. 18). Moreover, whatever their relation to the arteries, since they are usually empty save for small amounts of granular material (fig. 21), it is clear from this and other direct evidences that they communicate rather freely with the large central venous spaces and the draining veins. That they must, however, also communicate in some manner with the lymphatic tissue and the blood islands and blood spaces, is indicated by such appearances as those represented in fig. 20, and by the results of many puncture injections, as well as by other considerations.

While, then, it was comparatively easy to determine the direct connection between lacunae and veins, microscopically alone, their relationship to arteries could be demonstrated satisfactorily only by injection methods, for no matter how close to a lacuna the arterial terminations were, they were only seldom seen to open directly into them (fig. 23). Nor was it easily possible to demonstrate a direct communication between venous lacunae and the blood islands or blood spaces (fig. 24), or between them and the peripheral or subcapsular blood space, except in nodes whose structural relations had been profoundly altered as a result of decided depletion of the lymphatic tissue. But even in most of these specimens a narrow and more or less perfect barrier of lymphatic tissue almost invariably separated them from the blood islands or blood spaces (figs. 13, 21 and 22). The existence of these barriers of lymphatic tissue between the venous lacunae and the peripheral blood space on the one hand, and the central or internal blood spaces or blood islands on the other, as well as the almost constant presence of an amorphous or slightly granular deposit in many of them, even in the case of nodes practically devoid of lymphatic tissue, are particularly significant, it seems to me, for the elucidation of the somewhat obscure circulatory conditions. Besides, that the interpretation of these venous spaces or radicles as lymphatic spaces, however excusable, is erroneous, must be evident from the above experiments and observations.

In some depleted nodes, and very rarely also in others, large connective tissue septa divide the node so completely that the individual subdivisions might almost be considered as separate nodes (fig. 16); but no specimens were found in which the lymphatic tissue could be said to be fibrous or muscular, as stated by Vincent and Harrison [28]. Indeed, in the great majority of cases, there are no evident septa or trabeculae extending inward from the capsule and subdividing the node. The coarser reticulum, however, is generally plainly visible in the peripheral blood space, in many blood islands (fig. 25), and throughout depleted nodes, by means of low magnification. That this reticulum is more conspicuous in the peripheral blood space is, of course, due to the fact that it is coarser here where it comes into relation with the capsule, and because it is generally obscured much less here by the presence of cellular elements. In the deeper portions of the node it is much finer, denser, much less cellular, and sometimes not at all apparent in the follicles in sections stained in the ordinary way. The size of the meshes of the reticulum also vary markedly in different portions of the node. They are largest where the fibers are coarsest, and smallest where they are of greatest tenuity. Although some very fine fibres can be found in practically all portions of the parenchyma, it is in the follicles where the finest reticulum is found. Here the meshes are often so small in section that they contain but a single cell. As in the follicles of lymph nodes, the reticulum is less evident in the center, where only an imperfect network can be demonstrated. Were this difference less constant it might possibly be due to variations in staining power of the reticulum, or to a faulty technique, but the same results were obtained by the special stains used. Near the periphery of the follicle, on the contrary, the fibers seem crowded together, and consequently are generally very evident, because they are coarser and have a rather circumferential arrangement. The finest reticulum fibers noticed were so minute that they appeared as extremely fine lines under the highest magnification used (x 1340).

In the center of many good-sized blood islands, or in blood spaces, reticulum could never be demonstrated by the Bielschowsky or any other method. Moreover, in empty or in partially empty nodes many of the coarser reticulum fibers in the empty blood spaces seemed to end abruptly, as though they had been forced asunder. Nor was it difficult to find cells with six or more processes, some of which terminated in free ends a short distance from the cell. At the border of large blood islands, or of blood spaces, a very definite bounding or confining layer of coarse reticulum, from which branches extended into the blood islands, was frequently present. In some cases these walls of reticulum were formed by several parallel fibers, which looked as though they had been crowded together more or less, and which very closely simulated conditions found at the periphery of the follicles. Were it not for the fact that this wall of reticulum which separates the blood islands from the lymphatic tissue gives off branches which are directly continuous with the adjacent reticulum on both sides, it would be very difficult indeed, or impossible even, to distinguish the walls of some empty blood spaces from those of empty venous lacunae. However, generally only a portion of the circumference of a blood island was thus bounded, the remainder of the boundary being formed by the parenchyma of the node, in the bounding area of which a gradual change from pure lymphatic tissue to the blood contained in the blood spaces could be seen. These transitional areas strikingly demonstrated the relations existing between blood islands or spaces and the parenchyma of the node, and in them it was easy to see that the blood in the blood islands had probably merely replaced the lymphocytes.

Aside from small quantities of plain muscle found near blood vessels, none was observed save in the capsule, where a few fibers could occasionally be distinguished, but these too were probably associated with blood vessels. Hence the conclusion that involuntary muscle is a purely incidental constituent of the hemal nodes of the sheep, seems justified; and the statement that hemal nodes can alternately contract and relax, seems a highly fanciful conception, except in so far as such alternations in volume may be the result of a varying pressure or fluctuations in calibre of the arteries. I am fully aware that these observations are somewhat at variance with those of Robertson [24], Weidenreich [37] and v Schumacher [27]. According to Weidenreich unstriated muscle and a few elastic fibers are found, especially in the inner layers of the capsule. Both Weidenreich and v Schumacher state, however, that these constituents vary greatly in amount; and the former adds that smooth muscle was not found in the lymphatic tissue.

Although sections taken from a number of nodes were stained with different elastic tissue stains, undoubted elastic tissue fibers were never found. However, since all stains used for this purpose also stain the reticulum to some extent, it is practically impossible to differentiate these two kinds of fibres definitely by the ordinary elastic tissue stains. Moreover, the fine reticulum fibers which are very numerous often branch and have a wavy outline so as to simulate elastic tissue fibers very closely. Hence the evidence obtained in this investigation is an entirely negative one as far as the occurrence of elastic tissue is concerned.

Neither could fat cells be demonstrated in the parenchyma of a number of nodes examined after the use of special methods of fixation and hardening, such as those of Vom Rath, Flemming, Herxheimer, Hermann, or by the use of osmic acid. Negative results were also obtained with Herxheimer's stain as modified by Bell. The only nodes in which there seemed to be a rather ill-defined line of demarcation between the parenchyma and the surrounding fat were developing nodes, or specimens in which the generally inconspicuous capsule was extremely thin in some places. These observations regarding the relation of the fat, made on several hundred nodes taken at random from a large series of carcasses of sheep, bovines and goats, stand in striking contrast to those of Meek [17] on nodes from three pigs. Meek says that "On microscopical examinations they (the glands) are seen to possess a very thin capsule and in some cases a distinct capsule cannot be said to exist, the peripheral sinus of the gland being directly contiguous with the periglandular fat, and the cellular tissue of the sinus spreading between the contiguous fat cells. This condition much resembles that seen in the marrow of the long bones at the junction of cellular and fatty marrow." These observations of Meek are similar to those made on sheep by Clarkson [2], who stated that the cells of the surrounding fat are often in contact with the adenoid tissue. It is particularly interesting in connection with Meek's observations that v Schumacher failed to find hemolymph (hemal) nodes in the pig. Both he and Baum and Hille, who according to v Schumacher first directed attention to the matter, and also Baum, found fat cells bordering the marginal sinus in most of the lymph nodes of the pig. Baum regarded this as fat formation on part of the reticulum, beginning from the periphery and leading to complete atrophy of the node, as due to age; but v Schumacher found that fat is already present at six months. The latter also called attention to the well-known fact that similar changes occur in other animals, and that erythrocytes are normally present in the lymph sinuses of lymph nodes of the pig.

Intra-capsular sinuses, or blood spaces, as described by Robertson [24] as extending one-fifth of the distance around the gland, were not seen; although it is not rare to find free blood in the looser portions of the capsule. Neither did nodes which were almost depleted of lymphatic tissue, and which might perhaps be considered as undergoing retrogression, show the least sign of fatty degeneration. However, Warthin [33], in writing of the marrow lymph nodes of man, reported the finding of fat cells throughout this type of node, and also maintained [34 and 35] the development of hemolymph nodes from fat and their degeneration into fat; but Vincent and Harrison [28] reported that "In no instance did we find any fat cells inside the capsule" in the sheep and ox.

The conclusion that the blood islands and blood spaces, both peripheral and central, are transient, and perhaps even quite incidental structures, seems amply justified. Present now and absent then, found in this node and not in that, their usual presence in developing nodes even, does not signify, it seems to me, that they are indispensable constituents of hemal nodes. It is not uncommon, for example, to find a portion of a node containing many follicles which are in a state of proliferation, and which encroach upon both the peripheral and the central blood spaces or blood islands. That such a process must often result in the complete obliteration of both peripheral and central blood spaces seems very likely indeed. Moreover, since the blood spaces are usually engorged with blood, which cannot be expelled from them by external pressure even when they are large, further proof is given that they probably are not as a rule in free direct communication with the veins. For these and other reasons, I have come to regard the blood islands—the blood spaces including, as a rule, the peripheral or subcapsular blood space—as very largely representing areas in which the parenchyma of the node has become depleted of lymphocytes, whose place has either wholly or partly been taken by blood. Since, however, this blood is usually in an apparently good state of preservation, it seems to follow that these areas when large must nevertheless have fairly good communications with the vascular system. That they are probably not in free communication with the arteries, however, seems to be suggested by the fact that no such communications could be demonstrated microscopically, and that they were not injected from the aorta; unless the supposition that the blood contained in them prevented the entrance of the injection mass, can be accepted as an adequate explanation. The adequacy of the latter explanation seems doubtful, however, since, as already stated, it is usually impossible to demonstrate arterioles or capillaries opening directly into the blood spaces, although the direct communication of the latter with veins is occasionally seen. For even in the case of the small and definitely circumscribed blood islands, which are completely surrounded by lymphatic tissue and which lie more or less distant from neighboring blood spaces, a direct communication with the arterial system could not be demonstrated. Consequently it is difficult to believe that such a direct communication, if it occurs at all, represents normal or at least common conditions.

THE CELLULAR CONTENT

For the purpose of studying the cellular content of hemal nodes, blood smears and cover-slip preparations from fresh nodes and from the blood of the vein draining the node were also examined. In order to be certain that the veins from which the blood was taken actually drained a hemal node, injections into the node were made later. Although no full discussion is here intended, the large number of nodes examined and the many different staining methods used, afforded every opportunity for a comprehensive study of the cellular content.

As is well known, the ordinary lymphocytes form the great bulk of the parenchyma of most nodes. Small areas in which they mingled in anything like equal proportions with erythrocytes were only rarely found, and specimens in which such intermingling occurred throughout an entire node, or an entire section even, were still less frequent. Although a good deal of intermingling occurred in some specimens, both lymphocytes and erythrocytes were segregated more or less distinctly as a rule; and even in nodes which contained but remnants of lymphatic tissue the lymphocytes were formed into small circumscribed areas or groups near the radicles of the venous system. The constancy in staining characters of the lymphocytes was in striking contrast to that of the erythrocytes and acidophiles. However, in nodes which practically represented a sac of blood in which the small remaining masses of lymphocytes were surrounded more or less completely by remnants of the framework of the node, both protoplasm and nuclei of the lymphocytes occasionally assumed very irregular shapes. In other cases the nuclei stained poorly, and the nuclear network was indistinct; while in still others they were pyknotic or had apparently fragmented.

Variations in the size of the lymphocytes within the same or in different nodes were considerable; but often these were apparent and not real, for these fluctuations were chiefly due to variations in the size of the nuclei, rather than to differences in the quantity of cytoplasm present. Since however, the cell outlines were very frequently indistinct, while those of the nuclei were well defined, these observations were not wholly satisfactory. The protoplasm was often not eccentric; and where, as in case of the center of the follicles, the cells were closely packed, they were much larger, had vesicular nuclei, and frequently a more or less polygonal outline. The size and number of the chromatin granules varied greatly, the smaller ones being more common near the periphery of the nucleus, while the larger ones, on the contrary, lay nearer the center. The chromatin network too was often quite distinct, but well-defined nucleoli were infrequent. Moreover, the nuclei of cells which lay near the periphery of the follicle, were usually more regular in shape, and were often entirely filled with granules; while those nearer the center, besides usually being vesicular, larger, and more irregular in shape, contained but few granules. Unmistakable mitotic figures could not always be found in the follicles, and still less frequently in other parts of the nodes. Since, however, a comparatively small number of specimens were prepared for this particular purpose, these statements may not be thoroughly representative.

The apparently excellent state of preservation of the blood, in both the parenchyma and subcapsular blood spaces, in the great majority of nodes, is in marked contrast to the degenerated condition frequently observed in the lacunae of Weidenreich or true venous sinuses. Nucleated red cells were found nowhere, however, save in foetal nodes. Although the erythrocytes were generally well preserved, all gradations between perfect cells and small masses of cell detritus were found in specimens prepared in many different ways. As might be expected, however, they were frequently well preserved in nodes depleted of lymphatic tissue; although the absence of fragments of erythrocytes within these nodes may have been due, in part at least, to the freer circulation which must exist in them and which assures a freer drainage of the node. In some specimens which were only partially filled with lymphocytes and blood, many erythrocytes assumed most unusual shapes, which probably cannot be attributed to poikilocytosis. In some Zenker preparations, for example, many isolated cells which were not crowded upon by others were truly cup-shaped, as has been variously observed. The outlines of others were ovoid, or crescentic; while still others looked as though the cell membrane had ruptured, and retracted somewhat, thus leaving an opening with an irregularly torn margin. Among these cup-shaped cells some fragments of erythrocytes were always found; but most of them stained no differently than the normally-shaped ones. Aside from this disintegration, the erythrocytes, particularly in nodes depleted of much of the lymphatic tissue, also exhibited some variability, in staining characters. In Zenker preparations, most of them usually stained a golden yellow with orange G; but groups or areas of others took the pink of Congo red or eosin; and practically all gradations in staining reactions were found between these colors. The best-preserved cells usually stained with orange G, as was the case in embryonic nodes; although it must be added that irregularly shaped erythroblasts contained in the latter, occasionally stained pink. Since, however, unmistakable fragments of erythrocytes also often stained pink, it may be inferred that this selective staining quality on part of some erythrocytes probably signifies little else than incipient degeneration. Since some of the fragments of erythrocytes were circular in outline, they simulated blood platelets so closely that if found in circulating blood they would in ordinary preparations probably be indistinguishable from them. Although it was sometimes difficult or impossible to stain the erythrocytes in the blood spaces satisfactorily, it is doubtful whether this fact can be attributed to a deficiency in hemaglobin, as held by Meek [17], in case of cells from pathological glands taken from the human body.

Polymorphonuclear leucocytes were common, especially in some parts of the parenchyma and in the veins. They were rather uncommon in the blood islands and in the peripheral blood space, and were not observed in the follicles, save when these contained blood. Large mono-nuclear leucocytes were found frequently in the lymphatic tissue, and in greater numbers in cover-slip preparations taken from the vein draining a node. In the arteries, on the other hand, and in the blood islands, they were found in smaller numbers only.

Although individual phagocytes could usually be found, marked phagocytosis was not a constant phenomenon. In some cases, however, the whole section was dotted with scattered polymorphonuclear leucocytes, which were filled with fragments of erythrocytes and fairly well preserved cells. These phagocytic leucocytes were not much enlarged, as a rule, and were always well preserved. In some cases, however, so many and such extremely large phagocytes were present that the whole section of a node was seen to be studded with them on lower power (x 42) magnification. Since these large cells were filled so completely with erythrocytes and fragments of such, they gave the section the appearance of containing numerous small blood islands or areas. The nuclei of these large endotheloid cells, a group of which was sometimes contained in a follicle, were large, oval and vesicular. Occasionally similar isolated cells were found in small numbers, in the hemal areas of nodes in which phagocytosis by polymorphonuclear leucocytes was very active; but this association was not at all constant.

Besides typical eosinophiles, which were sometimes exceedingly numerous and rarely arranged around an artery (see fig. 26), others with less evident granules were not uncommonly present. These were usually most evident in sections of nodes fixed in acetic bichloride and stained in haemotoxylin followed by rubin S. Besides these atypical eosinophiles, other generally much larger acidophile cells with vesicular and occasionally pyknotic nuclei, were also found in developing and mature nodes. They varied considerably in size, and were undoubtedly phagocytic in some cases.

The most uncommon cells found in the course of this investigation were of course the poly- and megakaryocytes, of varying sizes and shapes. Some of these multi-nucleated (?) cells were extremely large, and had a very irregular outline. In fact they were rarely so irregular that the outlying portions suggested the occurrence of pseudopods and amoeboid motion. These cells, which were usually found in the lymphatic tissue, were sometimes surrounded more or less completely by an empty space of varying width, which was, however, seldom so large as to accommodate additional cells. Although more numerous in developing nodes, there was nothing which indicated that they are characteristic of any particular type of node, or that they are confined to any particular stage of development. They were present in foetal nodes, in those from young lambs, and in those from adult sheep as well. Usually they lay somewhat isolated, though rarely a group of three or four was found. They varied much in size, a single section of the largest extending halfway across the field of a No. 5 ocular and homogeneous immersion (Zeis) and through a thickness of 10-50μ; the largest measuring 30x50x30μ by filar micrometer. The protoplasm, which was non-granular, took an eosinophile stain and was not surrounded by a recognizable cell membrane. Rarely a somewhat hyaline border, suggesting degenerative changes, was noticeable. The vesicular well defined, apparently separate, nuclei, were generally circular or irregularly oval in shape, had a distinct nuclear membrane, and varied from about 5 to 20 μ in size. When large and single, the nucleus was frequently lobed or crenated; and when multiple, as many as six could often be seen without a change of focus, assembled in the center or scattered about at random in the protoplasm. The chromatin granules in the nucleus were few and small, the nuclear network indistinct, and mitotic figures or conclusive evidences of amitosis were never observed. However, since only a comparatively small number of these giant cells could be observed, it would be unjust to over-emphasize these facts. Vacuoles were seen only occasionally; but some cells seemed crowded with inclusions, some of which simulated erythrocytes and platelets quite closely; while still other areas looked like local condensations in the protoplasm, which in the stains used suggested areas of degeneration, some of which looked not unlike Negri bodies. In some cases these local condensations or degenerations which stain a deeper pink are surrounded by a clear area or halo, which gives the whole structure a superficial resemblance to a nucleated cell; and in other cases such were actually included in the periphery of the protoplasm.

Plasma cells were found in small numbers in some of the specimens only. They were demonstrated most successfully by Unna's polychrome methylene blue, after fixation and hardening in alcohol. Preparations were also stained according to Ehrlich, Ehrlich and Westphal, and also by Unna's polychrome methylene blue followed by orcein; but the results obtained by these stains were not as satisfactory. There was nothing characteristic about their distribution or structure, for isolated specimens were scattered about at random, and were also found in some of the follicles. I do not regard their presence as unusual or specially significant, or indicative of inflammatory changes, for the nodes were normal specimens.

Mast and iron containing cells were never found, although special methods were used and repeated examinations made; and pigmented cells were seen but seldom. In the search for iron, for example, all known methods were used, without a single positive result being obtained. However, since Weidenreich [38] found lumps of pigment of a brownish-yellow color which gave the reactions in sections treated for inorganic iron with ferrocyanide and hydrochloric acid and also with ammonium sulphohydrate, it is possibe that there is considerable variation with respect to the presence of iron, or that the nodes under observaion were not hemal nodes. This supposition also receives some support from the observation of Weidenreich that only a particular type of cell, designated as a *"direct hemophage"* by him, contained inorganic iron. I am convinced, however, that not every cell which might justly be regarded as a direct hemophage gives the ferro-cyanide-iron reaction. In fact none of these cells, in the large series of nodes examined, gave this reaction. In the search for other pigment no special methods were used, since ample opportunity for its detection was afforded by the many different methods of fixation and staining used. The great majority of hemal nodes contained no pigment; but a group of peculiar and uncommon lymph nodes, which will be discussed presently under the designation of mixed nodes, contained very much pigment. However, only about a dozen of these nodes were found, among many hundred specimens examined. Indeed, the absence of pigment is an important characteristic of typical hemal nodes, and is particularly interesting because such decided destruction of erythrocytes apparently occurs in so many of them. v Schumacher too called attention to the fact that pigment is usually absent in the hemal nodes of the sheep.

The Question of Mixed Nodes

As already stated and emphasized, the exceedingly protean character of hemal nodes often makes it difficult or impossible even to distinguish them from lymph nodes by inspection, or even by microscopical examination of a few sections. Because of this difficulty, no doubt, the supposition that mixed or true hemolymph nodes exist seemed justifiable to many investigators. Helly [11], Forgeot [6 and 7], and v Schumacher [27], for example, stated that all transitions can be found in the sheep, from glands with lymphatics to those without them. Warthin [34] and 35] made a similar statement regarding lymph nodes in general; and Forgeot even insisted that injections are unnecessary to demonstrate the presence of lymphatics in hemolymph nodes. Forgeot nevertheless stated that hemolymph glands may be wholly without lymphatic connections, and also that the lymphatics join the developing hemolymph node later; while v Schumacher concluded that they lose them. Similarly for man Warthin [33] stated that he found combination forms of spleeno- and marrow lymph nodes, as well as all manner of transitions between spleno-lymph glands and lymph glands and the spleen. Warthin [33]—and later Lewis [13 and 14]—further stated that there may be blood sinuses in one part of a node and lymph sinuses in the other; and Warthin [31] added that "transitional forms cannot be distinguished from congested lymph glands." If this be true, then the question as to how it is known that true hemolymph nodes, *i. e.*, nodes other than lymph nodes, in similar relation to both the lymphatic and the vascular systems as that of lymph nodes to the lymphatic system—*i. e.*, having sinuses common to both systems—occur at all, seems a pertinent one. For if transitional forms cannot be distinguished, what basis is there for any, not to say an elaborate, classification? Meek, who studied the lymph and hemolymph glands of man in pathological states, declares somewhat similarly, that "In a few cases where hemolymph glands were present (Meek does not state how they were identified as such) in large numbers, I have removed and examined all the easily found lymphatic glands of the same group, and found them all to show a practically identical condition."

It is not clear, to be sure, how identification of and differentiation between lymph and hemolymph nodes in "identical condition" was possible. Nevertheless, Meek continues: "It appears, then, that every lymphatic gland is a potential haemolymph gland. The experimental production of such glands in the guinea-pig is easy of accomplishment. . . ." According to Meek, then, a hemolymph node is only a lymph node under abnormal or altered conditions. That is, any lymph node subjected to an injury or to abnormal conditions either in disease or experimentally, can quickly be converted into a hemolymph node! This would also seem to be Retterer's conclusion regarding the nodes of guinea-pigs, which conclusions are discussed elsewhere* with Meeks' results, in connection with the writer's findings and experiments on these animals and on dogs. Meek, although speaking of two kinds of nodes and of the conversion of one into the other, concluded, however, in direct contradiction to Warthin and to himself, that there is no justification for classifying human nodes as lymphatic and hemolymphatic. A similar conclusion regarding the relation between lymph nodes and hemal nodes was reached by Retterer [22], who stated, in short, that all lymphatic nodes possess the same structure and functions, and whether they contain blood or not depends only upon the force of the lymph stream. It suffices to change the arterial pressure, and consequently the lymph pressure, in order to convert a gland from lymph to haemolymph gland, and vice versa.[†]

**Journal of Experimental Zoology*, 1914, and *Anatomical Record*, 1914.

In the course of this investigation only a few observations were made on human nodes; but as far as these and the examination of nodes from bovines, goats, dogs, cats, rabbits and guinea-pigs were concerned, no evidences whatever for the existence of combination forms or the conversion of one into the other, have been obtained. Because of the comparatively small size of the hemal nodes in most of the domestic animals injections were made only on the sheep, bovines and in a few goats.[‡]

Some of the lymph nodes which are indistinguishable often from hemal nodes save by injection methods, are comparatively large specimens which have the color of certain hemal nodes at one end and of lymph nodes at the other. Although these hemorrhagic or hemal portions are often irregular in outline and occasionally ill defined in many cases, they are nevertheless quite well defined to the unaided eye. In some cases this hemorrhagic area is confined to the interior of the larger nodes, and is consequently not evident on external examination alone. In addition to such specimens, others which represent all shades in color from the gray of lymphatic nodes to a chocolate-brown or a magenta-red, are not very uncommon. Still others are so deeply pigmented that they are black, and at once suggest anthracosis. These dark pigmented nodes also may simulate rare hemal nodes in external appearance, and hence may likewise suggest the occurrence of an intermediate group of mixed nodes.

Lewis [13] also emphasized the fact that intermediate forms are very numerous, and strangely enough referred to glands in ungulates "Many of the largest of which are (9-10 cm.) long and have a certain structure recently described by Weidenreich." The latter is then said to have described an intermediate form, having blood sinuses only in one portion of the node and lymph sinuses only in the rest, each kind of sinus occupying a distinct portion of the node. Although emphasizing the fact that there are ordinary lymph glands in which ". . . very similar and easily mistaken appearances are presented," Lewis further states that there rarely are other transition forms, in which there is a mixture of blood and lymph streams in one portion and only lymph in the sinuses of the rest of the node, on the other hand; and cases in which both streams mingle in one portion, while the rest of the node contains blood sinuses only.

[†] See also Retterer, Edouard: Des hématies des mammifères. *Jr. de l'anat. et de physiol.* Tome XLIII, 1907.

[‡] Hemal nodes were not found in cats, dogs, rats, rabbits and guinea-pigs unless we regard them as identical with supernumerary spleens.

Vincent also believed in the existence of nodes having sinuses common to the lymphatic and vascular systems, as also Robertson had previously stated.

Some of the difficulties in identification met with in gross appearance are likewise encountered upon microscopical examination of separate sections; but if a group of mixed or transitional nodes really existed with sinuses common to the vascular and lymphatic circulations, it is clear that it should be possible to inject both the lymphatics and the veins from them. For, as is well known, puncture of a lymph node always results in the injection of the lymphatic and not the vascular circulation of the node—except accidentally, and only very rarely; while, as has been amply established, puncture of hemal nodes, on the contrary, always results in injection of the veins draining the node, and occasionally the vein draining an adjacent node, but never the lymphatics. Hence, if mixed or true hemolymph nodes existed, the injection mass should appear both in the *vena cava* and in the thoracic duct. Such was, however, never the case; and after a little experience it was quite possible indeed to foresee, in most cases at least, what the results of puncture injections into a given questionable node *in situ* on the fresh carcass would be. For example, the microscopically pigmented nodes which suggest anthracosis, were generally found in connection with the lymphatic system. The same was also true of rare and rather large nodes found in the sub-lumbar region in sheep, a portion of which was typically lymphatic in color and the rest quite as typically hemal. If these large, apparently combination forms, were true hemolymph nodes, it should, of course, have been possible to inject at least the lymphatic vessels from the typically appearing lymphatic portion, and the veins from the typical hemal portion. However, this was never possible. Such nodes in the sheep were found to be either in connection with the vascular or with the lymphatic system, but never with both, and usually with the latter; nor has *anyone* injected the veins from one and the lymphatics from the other portion.

Since the only reliable criterion—the injection method—for distinguishing a lymph from a hemal node, was accepted only as a result of experiments, and is not a theoretical or preconceived one, it follows, to be sure, that the above results demonstrate that the mere presence or absence of free blood in the form of blood islands or intermingled with the parenchyma cannot and does not convert a lymph node into a hemal node. For if this were the case then there could, of course, be no such organs as true hemal nodes. The fundamental difference between lymph and hemal nodes, as pointed out and reiterated by Weidenreich, is the presence or the absence of lymphatics. It does not consist of or lie in a mingling of the vascular and lymphatic circulations of the node, or in the possession of sinuses and blood spaces common to both; nor merely in the presence of blood in the lymph spaces of lymph nodes. Furthermore, there is another fundamental difference between hemal and lymph nodes which has been overlooked so far, but to which attention was directed earlier in this discussion. It was emphasized in connection with injections that, as is well known, in mature lymph nodes injected from the vascular system, the transition from the artery to the vein is a very gradual one. These injections of the vascular system present many fine arborizations, as is characteristic of the vascular system in general. In the case of hemal nodes, on the contrary, there apparently is no such gradual transition by means of capillaries, but by very wide sinuses, devoid of reticulum and having walls like capillaries. These open directly into the draining vein, and communicate with the parenchyma and indirectly with the blood spaces. Hence it is evident that in order to change a lymph into a hemal node it is not only necessary to remove the characteristic lymph sinuses and lymph vessels, but to profoundly alter the vascular system. This fact and the fact that the distribution of the blood spaces—the so-called peripheral and central sinuses of hemal nodes—which are considered comparable to the lymph sinuses in lymph nodes, have a wholly different distribution, and do not as a rule form a communicating system, is also overlooked by v Schumacher, who concluded that an alteration in or an obliteration of the lymphatics is all that is required to convert a lymph node into a hemal node.

Hemal nodes in which the lymphatics ended blindly in the hilus, as reported by Helly, or in the capsule, as reported by v Schumacher and denied by Helly, or in which all stages of partial penetration of the nodes by lymph vessels occurred, were not found. Lymphatics were either present or wholly absent in all nodes examined experimentally or microscopically; and whatever explanation or explanations it may be possible to give for the occurrence of so-called hemorrhagic lymph nodes,—the occurrence of which no one doubts—*i. e.,* nodes in which blood cells are present in the lymphatic sinuses and parenchyma—it must be evident, of course, that congestion or hemorrhage or diapedesis in an organ does not change the essential morphological identity of that organ.

Upon microscopical examination most of these apparently transitional forms were found to contain no lacunae of Weidenreich (true venous sinuses) or large blood islands or blood spaces. In addition to portions of the parenchyma which looked like splenic tissue devoid of Malpighian corpuscles, or which, on the contrary, consisted of an almost solid mass of lymphatic tissue, they contained areas in which a great deal of golden pigment, and more rarely many oxyphile cells, were present. The partly depleted nature of certain of these nodes, and especially the presence in them of much brassy pigment and the occurrence of abundant phagocytosis, gave a very peculiar appearance to a section. Because of the open character of the parenchyma, they simulated lymph nodes much more closely microscopically than hemal nodes. Since phagocytosis is a very noticeable feature in these specimens, it does not seem impossible, to me, that Lewis's [14] observations regarding the relative frequency of phagocytosis in the spleen to that in the hemal nodes, was based on observations on this type of lymph node. This supposition gains in probability by the observations made on pathological human lymph nodes by Warthin and Meek, to the effect that the degree of pigmentation varies with the amount of hemolysis; and also by the observations of v Schumacher regarding the comparative infrequency of phagocytosis in hemal nodes. Meek also speaks of the occurrence of "yellow or light brown pigment, usually confined to the sinuses though rarely found in the germ centers." Meek also found that even in these pathological human nodes the reactions for free iron were very variable, and in the majority of cases *not obtained,* though occasionally the presence of a large amount of free iron could be established. These findings of Meek are in entire accord with what was found by the writer in intensely congested, apparently hemal nodes, found along the common iliac vessels in the carcass of a sheep which had been seriously torn in the gluteal region by dogs, and in another which died of septicaemia. The first sheep was bled to death after necrosis had set in at the site of injury, some days after having been attacked. At necropsy it was found that practically all the pelvic and prevertebral lymph nodes were hemal in color, and could probably not have been identified positively by microscopic examination alone; yet by injections it was easily shown that they were lymph nodes in direct connection with the lumbar lymphatics and the thoracic duct. The dilated lymphatics going to these nodes were plainly visible, and were tinged with blood. It would be ridiculous, to be sure, to assume that simply because this animal had been attacked by a dog or dogs—and what matters it whether the attacking agent is a dog, a disease, or an experimenter?—these lymph nodes had been converted into hemal nodes. In a second sheep similar conditions were found, and similar results obtained.

In addition to small quantities of lymphatic tissue intermixed with blood and pigment, some of the apparently mixed nodes found in sheep contain extremely large connective tissue septa and trabeculae, and the walls of some of the arteries are many times the ordinary thickness. These connective tissue septa are rarely so thick and so extensive that they could be seen with the unaided eye, to divide a section of a node 4-6 mm. in size into more or less distinct portions. Sometimes, also, large masses of connective tissue lay here and there under the capsule, although not continuous with it. In other instances, although not evident to the unaided eye, the total amount as well as the relative proportions of the connective tissue were smaller than usual, and located mainly in the center of the node. Frequently, also small numbers of erythrocytes and lymphocytes were scattered about miscellaneously in the connective tissue septa.

The arteries with greatly thickened walls were found almost exclusively in areas very largely devoid of lymphocytes and erythrocytes. No sclerotic or atheromatous changes were seen. The intima was normal or practically so, and the thickening of the wall was due entirely to an increase in thickness of the muscular, and chiefly of the adventitial coats. Although slight variations in staining power were observed, this thickening of the wall was probably of no significance with respect to the character of the node, even if it was correlated with its functional activity.

Many of the erythrocytes scattered about in these depleted areas showed degenerative changes; but in those portions of the sections of the node which had more the appearance of hemal nodes and where they were more numerous, they were better preserved. These degenerating erythrocytes often lay in groups, which sometimes formed a more or less compact mass around leucocytes. Only small, compact masses of lymphocytes were contained in the depleted portions, but their number increased toward the denser portions of the node, until the inter-follicular areas looked not unlike splenic tissue because of the intermixture of blood and lymphocytes. Between these denser portions of parenchyma small numbers of lymphocytes were also scattered about among certain oxyphile cells and erythrocytes; and while follicles were found in the empty portions, they were common and frequently large in the non-depleted portions. In these areas the connective tissue septa were, as a rule, considerably thicker than usual, and a very coarse and imperfect reticulum was noticeable by means of the ordinary stains. It is, however, the above referred to acidophile phagocytic cells with a hyaline like protoplasm and the presence of pigment, which gave sections of some of these nodes the prominent distinguishing microscopical characteristics. These acidophile cells are occasionally so numerous and so large that they are plainly evident under low-power magnification. In contrast to the lymphocytes and erythrocytes, they are most abundant in the depleted portions, and gradually decrease in number as the more typical portions of the node are approached. In the depth of the latter they are practically absent. Though most of them are fairly circular in outline, some are quite irregular in form. In some cases this irregularity of form seemed to be due to degenerative changes, or slight lobulation; but many of them had distinct processes, and looked exactly like branched connective tissue cells, and must, I believe, be regarded as having at least partly such and a reticular origin. On some of these cells which lay isolated, processes could be seen which were in continuity with the coarser reticulum or with the cells at the border of the trabeculae. In addition to those shaped like ordinary branched connective tissue cells, others with a greatly elongated cell body with a process at each end were also found. Although but a single terminal process or a bifurcated one was seen, as a rule, other processes may, of course, have extended in other planes and directions. The nuclei of these cells are vesicular, irregularly oval in outline, fairly central in position, seldom larger than twice the size of the erythrocytes, and contain but few chromatin granules. Usually only one nucleus is present, but it is not uncommon to find polynuclear cells. The cytoplasm, which is abundant and takes an acidophile stain, is non-granular or nearly so in non-pigmented cells; but cell inclusions are very common. The latter usually have the form and appearance of laked erythrocytes, and, if external appearances are a sufficient guide, may be designated positively as such. One or two such cellular inclusions are very common, and specimens with four or more occasionally occur. While most of the cells containing erythrocytes are non-pigmented, many of those without inclusions have a protoplasm which is very densely filled with golden or brassy pigment granules. This intra-cellular pigment is not confined to the cell body, however, but is also found in some of the processes. Although the proportion of the intra- and extra-cellular pigment varies considerably in different nodes, the size of the granules is quite uniform. Special tests for iron were used repeatedly on sections from these pigmented specimens, but no positive results were obtained. It is of particular interest in this connection that similar pigment and acidophile cells undoubtedly phagocytic in function, are also found in small numbers in some typical lymph nodes; and that, as far as microscopical appearances are concerned, there is a striking similarity between the sections of the latter and some of the specimens which simulate hemal nodes so closely in external and microscopical appearances.

The Genesis of Intermediate Forms

A moment's reflection will make it evident that any condition which results in congestion or hemorrhage or the accumulation of blood cells in the parenchyma or the sinuses of lymph nodes, will produce the specimens which have been responsible for much confusion. In fact many investigators frankly stated that they could not distinguish between congested or hemorrhagic lymph nodes and hemal nodes. Haberer [10], for example, stated that he repeatedly confused human lymph nodes which were changed by sepsis, with accessory spleens *macroscopically* although they were found to be typical lymph nodes *microscopically*. Haberer also called attention to the fact that in emaciated individuals nodes are frequenly found which do not look like spleens microscopically because they lack Malpighian corpuscles, but which seem to be transition forms resulting from pathological conditions. Moreover, it is probable that the changes observed in lymph nodes after splenectomy by many, if not all, the early experimenters, were of septic origin, as Foa and Schiff held, and as their own descriptions suggest. Besides, it is apparent that blood cells must be found in the sinuses of lymph nodes whenever the afferent lymphatics drain an area in which such cells can enter the lymphatic vessels, as in the case of wounds, injuries, inflammations, etc. Retterer and Lelievre [23] also showed that stasis of the lymph current results in the accumlation of blood cells in lymph nodes. Hence these authors conclude that hemolymph nodes are only lymph nodes in which there is stagnation of the lymph current. Retterer [19], who called attention to the fact that "ten years since"—thirteen years—he reported the constant presence of erythrocytes in the lymph of the dog, rabbit, and guinea-pig, says Forgeot has shown the same for ruminants. Forgeot [6] also claimed to have found nodes in the lumbar region of sheep, goats, and under the pleura and pericardium in bovines, from which blindly-ending efferent lymphatics of various forms extended and occasionally returned to the node. Retterer [19] furthermore found that bleeding* and temporary abstinence removed the blood cells from hemolymph nodes and changed them into ordinary gray lymph nodes; while prolonged abstinence, on the contrary, resulted in the accumulation of erythrocytes in lymph nodes.

---

*Most investigators have held the contrary for bleeding.

From these considerations it is evident that many morbid and abnormal conditions can cause an accumulation of blood cells in the parenchyma and sinuses of lymph nodes, and that blood cells are probably constantly present in the lymph of many, if not of all mammals. From observations made especially on dogs the writer is also convinced that there often is a retrogression, or better a diffusion, of blood from the large veins into the large lymphatic trunks at points of juncture, which can convert many of the bronchial and mediastinal lymph nodes into so-called hemolymph nodes.† The distance to which this reflow or intermixture of venous blood—or suspensions and solutions injected into the veins—can extend into the lymphatics is truly remarkable, and is discussed more fully in an article on the hemal nodes of dogs, cats, etc. A similar retrograde flow of chyle was noticed in several instances from the large abdominal lymphatics to the external iliac trunks almost up to the inguinal ligament in dogs. It should also be recalled in this connection that unusual lymphatico-venous connections may rarely be a factor in the production of hemorrhagic lymph nodes. It is not my aim to open an old controversy regarding lymphatico-venous communications, but the evidences recently brought forward by Huntington [11*a*] in Macropus rufus, by McClure and Silvester [16] for primates, carnivora, rodents, ungulates and marsupials, by Silvester [26] for the monkey, and by Baum [1] for bovines, seem to confirm, in a measure, the early observations of Wutzer, Nuhn, Petrel, Kaaw, Kulmus, Lohmann, Fauth, J. Müller, Panizza, Meckel Sr. and Jr., Steno, Nuck, Pequet and others on man and animals which a partly justified skepticism has so far obstinately refused to accept. The writer has not much confirmatory evidence, but it is clear that where a lymph node is intercalated in a lymphatic circuit, in such a way as to have a double communication with the veins, retrograde diffusion of blood from the peripheral vein through a short efferent lymphatic into the node can easily convert all nodes lying more centrally on the lymphatic circuit into reddened lymph nodes, because of an intermixture of blood and lymph in the sinuses of the more centrally placed lymph nodes. Such a case was actually observed by the writer in a lamb in the case of an axillary lymph node on each side.

---

†Although Retterer (*Comptes Rendus de l'Assoc. des Anat.*, Lyon, 1901) rejects such an explanation in referring to a similar explanation made by Thomas Bartholin, I am certain that a reflow or diffusion of blood from the large veins into the lymphatics occasionally occurs.

Another explanation for the occurrence of reddened lymph nodes lies in the old observation that such a wide and direct open communication between the afferent and efferent lymphatics of a node may exist directly through the peripheral sinus, that the active lymph current is largely, even if not wholly, limited to the latter. Under such circumsances there would be a slow lymph current in the interior of the node, with consequent accumulation of blood cells as a result of stasis. That nodes with such circulatory conditions exist is beyond question, for the varying rate with which suspensions of India ink traverse a node is quite striking. Were it not for the existence of such large peripheral sinuses, a great deal more difficulty would also be experienced in injecting a series of successive nodes from the most peripheral one, and of accounting for the ease with which the thoracic duct, even up to its entrance into the vein, can occasionally be injected from the pad of the foot in the cat. In several instances this was accomplished with but a small fraction of a barrelful of India ink contained in a hypodermic syringe of 2½ cc. volume. These observations confirm the inferences of v Frey and Donders, and also the observations of Richter in the pig.

In looking about for an explanation for the reddening of lymph nodes and the presence of blood in the sinuses, Vincent [29] said: "I have not so far studied the blood supply to these glands by means of injections, nor have I succeeded in finding the blood vessels in direct communication with the 'lymph' sinuses of the gland; but from the large number of red corpuscles sometimes found in them, I am convinced that there must be such communication." It will be remembered that Meckel Jr. and Sr., Lindner, Fohmann, Lauth, and, of course, Lippi, also believed in the existence of such communications, and that Lewis [13] claims to have abundantly confirmed such occurrences by observation. While making thousands of injections of lymph nodes, no evidence for the existence of such communications, whose accidental existence is therefore not denied, was obtained in the sheep. However, in young cats, in which the mesenteric lymph nodes are very tender, both veins and lymphatics were not infrequently injected by puncture from a node. In most instances the lymphatics were injected first, and then the veins. Moreover, in guinea-pigs such results are far easier to obtain, and not infrequently the injection of veins and lymphatics is practically simultaneous. Nevertheless, a little experimentation proves conclusively that these results are obtained only because the tender nodes are distended by the injected mass, and hence disrupted by it, and by the relatively large needle or capillary tube used for purpose of puncture injections. Injections of these mesenteric nodes from the periphery never resulted in injection of the veins, even when the efferent lymphatic trunk was clamped.

From all these considerations it is evident that there is no lack of abundant explanation for the occurrence of erythrocytes in the sinuses and parenchyma of lymph node—much less for the reddening—entirely aside from questions of disease, the assumption of intra-nodal lymphatico-venous communications, or the formation of erythrocytes within lymph nodes, under normal conditions.

CLASSIFICATION

Saltykow [25] and Retterer, working with human material, pronounced against the specific character of the hemolymph nodes. Their opinion was confirmed later by Vincent and Harrison [28], who, from their work on bovines and sheep, concluded that hemolymph glands are modified lymph glands, and that they develop from them. A similar position is taken by Meek [17], who declared that "it seems unreasonable that human 'hemolymph' glands should be classed as a separate category." If these conclusions are correct it is evident, of course, that what have been repeatedly described in man as hemolymph nodes are nothing but modified lymph nodes. However, Warthin not only distinguished lymph and hemolymph nodes in man, but described three classes in the latter and also differentiated spleno- and marrow lymph nodes, both of which classes were said to be in connection with the lymphatic system. In spite of these facts, Warthin nevertheless declared that only the second class, or marrow lymph glands, were organs *sui generis*. Warthin further stated that the long axis of marrow lymph nodes usually lay parallel to the adjacent vessel. How it is possible to regard some and not other hemal nodes as organs *sui generis* while maintaining the occurrence of transition and combination forms, is not clear to the writer. Nor is it clear how those who reported the occurrence of lymphatics in hemal nodes satisfied themselves that the assumed nodes really were hemal nodes, or that the lymph spaces really were lymphatic spaces, without actually demonstrating their relation to the lymphatic system. In contrast to Warthin, v Schumacher, who also observed all manner of transition forms between lymph and hemolymph nodes as far as the relations of the lymphatics are concerned, regarded the latter as rudimentary or undeveloped lymph nodes, and hence consistently pronounced against their being organs *sui generis*. v Schumacher distinguished only two kinds of lymph nodes, viz. (1) those with, and (2) those without lymph vessels, both of which classes may contain erythrocytes in the sinuses and parenchyma, and believed in a transformation of group 1 into group 2, and also regarded a retransformation probable.

Baum [1] recognized two classes of hemolymph nodes: those without lymphatics, which he designated lymphoid hemal nodes; and those with afferent and efferent lymphatics, or lymphatic hemal nodes.

Weidenreich was the first to demonstrate experimentally that the so-called hemolymph nodes in the sheep are wholly independent of the lymphatic system, thus, in a measure, justifying Drummond's supposition that they are organs *sui generis*. This statement of Weidenreich has been abundantly confirmed by the present investigation. Consequently there would seem to be no need for any more than two classes of lymphoid organs—lymph and hemal nodes. That not all hemal nodes varying in structure quantitatively can or should be classified separately is evident, of course; and such an elaborate classification as suggested by Lewis [13] and Warthin [32 and 35] is unwarranted, confusing, and certainly unscientific. The many structural variations in hemal nodes to which attention has been directed, no more justify separate classification than would the manifold variations in external form of such an organ as the liver, for example.

Neither the term hemal nor hemolymph node is wholly satisfactory or an appropriate one, however, for not all hemal nodes have an appreciable quantity of blood in the parenchyma; although they are intercalated in the vascular, and not merely in the venous system, as has been variously stated. Lymph nodes, on the contrary, are of course not, as the term would imply, only in relation with the lymphatic system. Hence lymph nodes are virtually the only true hemolymph nodes, for they alone have both lymphatic and vascular circulations wholly independent of each other. The term hemoadenoid would be clumsy and equally confusing as hemolymph; and while the term *splenic* is undoubtedly the most preferable and proper, in spite of the absence of Malpighian corpuscles in almost all hemal nodes of the sheep, the writer does not feel justified in introducing another term and thus adding to the confusion which already exists. Hence the retention of the term hemal node seemed commendable.

A subdivision of hemal nodes into active and inactive, while emphasizing certain prominent physiological differences, would not be exclusive either, for there probably are very few nodes in which functional processes are wholly in abeyance, even when the nodes are being rapidly depleted of lymphocytes and converted into a sac of blood. Moreover, we know but little regarding their origin, function and final fate. It is evident, of course, that in the case of depleted nodes, poliferation may nevertheless be exceedingly active, even while the node is depleted rapidly. Hence such a node might really be in a state of regeneration and of hyperactivity, while appearing exhausted and depleted and hence inactive. But the most obvious objection to a physiological classification of hemal nodes lies in the fact that all manner of structurally transitional forms—*i. e.*, active and inactive—occur if a microscopical examination of uninjected specimens is to form the criterion. Hence in the present state of our knowledge—or, better, ignorance—all attempts to subdivide hemal nodes into a number of definite classes must, it seems, remain entirely futile and wholly unjustifiable from all standpoints, even if some time ago both Lewis and Warthin stated that certain classes of hemal glands were limited to certain species.

FUNCTIONS

Clarkson, working on the horse, sheep and pig; and some of the earliest observers, and very recently also Meek [17], working on the pig, thought that hemal nodes were the seat of formation of erythrocytes as well as of leucocytes. Robertson, *e. g.*, strangely enough, thought that the nuclei of the large multi-nucleated leucocytes became erythrocytes; while Meek, writing about conditions found in the hemal nodes of the pig, says: "Of special interest are certain small islets of cells which occur in the midst of the blood in the sinuses. They are sharply defined from the surrounding red blood corpuscles, and are formed from aggregations of various types of blood cells. One such focus will contain, perhaps, fifty closely-packed normoblasts, another a clump of myelocytes, neutrophylic in granulation, while yet others are made up of aggregations of polymorphonuclear cells. Mitotic figures may be seen in the cells of these islets." . . . "The above appearances would seem to suggest that a part at least of the function of these glands in the pig is concerned with the formation of blood cells, red and white; and they are described at some length, as they differ materially from the conditions found in any human hemolymph glands examined." These observations of Meek are unique, for, as emphasized by Drummond [5], the stages in the formation of erythrocytes had not been observed in developing nodes even. However, Drummond too believed that hemal nodes exercised some function in connection with erythrocytes, and suggested that this function might be a cyclical one. This conclusion of Drummond was based on the great variability in cellular content; which variations, within the same or different species, he believed to be due to varying rates of blood cell destruction. Drummond further thought that the rate of destruction of erythrocytes within the individual node or species, was dependent upon the number of such nodes present. Warthin [33], who held that the formation of erythrocytes undoubtedly occurred in disease, also suggested a cyclical activity, and added that "the appearances (in disease in man) often suggest a transformation of adipose tissue into lymphoid tissue, and the possibility of a physiological rotation of the two forms of tissue." v Schumacher thought it *possible* that individual erythrocytes are formed in the sheep, but regarded such an origin as a very subsidiary one. He found phagocytosis by reticulum cells and a fragmentation of erythrocytes in the phagocytes in some nodes, but saw few pigment cells. An extracellular fragmentation or degeneration of erythrocytes, as observed by Weidenreich, is denied by v Schumacher,—a denial wholly at variance with my own observations.

That the destruction of erythrocytes—both by extra- and intracellular disintegration and hemolysis—and the formation of leucocytes, occur within hemal nodes, is undoubted. That these processes vary extraordinarily in degree within different nodes of the same individual and species, as well as in those of different species, is also evident; and while I fully realize that it is rather venturesome and often quite futile to draw conclusions regarding function from a purely morphological basis, yet it seems to me that the supposed function of "blood destruction" has been wholly over-emphasized. Moreover, it might pertinently be suggested that it is, after all, not "blood destruction," but mainly destruction of erythrocytes, which is apparently so prominent a characteristic of some hemal nodes. Nevertheless, since so many hemal nodes contain so very little blood, even when practically entirely depleted of lymphatic tissue, it is highly improbable that destruction of erythrocytes is the chief or even as important a function of hemal nodes as would seem to be the case upon cursory examination. For even if destruction of erythrocytes, be it by phagocytosis or by erythrolysis associated or unassociated by cytorrhexis, is the chief function of hemal nodes, it is evident, of course, that these processes must in all probability be due, and solely due, to some activity on part of the parenchyma of the hemal node. Hence even if this destruction within the node were due in part to the production of some lysin, one might reasonably expect the quantity of lymphatic tissue to be considerable, or proliferation of lymphocytes most active, in nodes containing comparatively large quantities of blood. This is, however, not the case; for, as is evident, the quantity of lymphatic tissue must of necessity vary inversely with the quantity of contained blood, and it is only rarely that many follicles are found in depleted nodes or in any hemal node which contains much blood. And even when this is the case and rapid proliferation of lymphocytes occurs, this very activity would then defeat the main object for which these nodes are supposed to exist—viz., blood destruction. For just in proportion as the hemal node became more able to destroy blood, less of the latter would be able to stay in the node, since the more lymphatic tissue there is, the less blood can be accommodated in the parenchyma of the node. And it is, of course, in the latter and not in the vascular current within the node, that the destruction of erythrocytes is believed to occur. Then, too, it is probable that the volume of flow through the node increases, up to a certain point at least, when the node is undergoing depletion as a result of loss of lymphocytes by the blood stream, and undoubtedly also as a consequence of the exercise of the supposedly specific functions of the node in this connection. Consequently, the more rapid the flow and the larger the quantity of blood that can tarry within the node, the smaller the power of the node will be to perform the very task for which it is supposed to exist. That is, just in proportion as the need for the exercise of their function of blood destruction increased, the nodes necessarily would become progressively less competent to fulfill it. Hence *rapid self-destruction* would seem to be the necessary result of the exercise of a supposedly normal physiological activity. To be sure, this is the ultimate fate of every organ and organism; but it seems unlikely that organs which apparently function for comparatively long periods of time, should be subjected to such rapid self-destruction when the need for their activity becomes greater. Since, moreover, the quantity of blood in some hemal nodes is so very insignificant, and since it is such an exceedingly variable one, and particularly since no signs whatever of destruction of erythrocytes can be noticed in many nodes, it is difficult indeed to regard such a function as the only or chief role that hemal nodes play in the economy of the organism. Hence for this and other more important reasons, the designation "hemolytic organs," suggested by Warthin, does not seem to be justified; and in view of the above facts it seems more probable to me that the formation of leucocytes of various types, rather than destruction of erythrocytes, is the chief function of the hemal nodes. That eosinophiles are formed in hemal nodes one can scarcely doubt, and the same is true of phagocytes. The largest of the latter, the polykaryocytes, and some megakaryocytes, could, to be sure, not easily leave the node because of their size, and probably seldom do so. Since these poly- and megakaryocytes, especially those of giant size, are so few, however, their activity, whatever it may be, is probably not a very important one, or at least not a very pronounced one.

The supposition that formative rather than destructive processes prevail in hemal nodes also receives some support from the observations of

Warthin [35] and others to the effect that the hemal nodes—if such there be—of man are enlarged in disease, in which blood destruction is known to occur. Moreover, no one has regarded the cause of the blood destruction to lie in the enlargement of these nodes; and it would seem more probable that hyperactivity in them at such a time should, as in the case of the bone marrow, be regarded as a constructive rather than as a primarily destructive reaction or process. Then, of course, there is the possibility that hemal nodes have the same function as the spleen—and supernumerary spleens—whatever that may be.

Although certain aspects of the cellular content and a discussion of the development of hemal nodes have been reserved for a separate article, I am prompted to call attention to certain difficulties confronting those who conclude that hemal nodes are only modified lymph nodes which may again become such and hence cease to exist. From a comparative anatomical standpoint it would seem strange that this accident in development is restricted not only to certain species, and predominates in certain regions of a given species, but occurs so much more frequently in some individuals—or at some ages—of a given species. Moreover, since the panicular and subcutaneous nodes in certain regions in bovines, are always hemal and never lymphatic nodes, and since the largest regional lymph nodes are never converted into hemal nodes, the problem is complicated still further. Besides, up to the present it has not been shown that true hemal nodes in bovines and sheep become diseased when the lymph nodes do; and no one has found a single carcass in which the place occupied so frequently by scores of hemal nodes was taken by a corresponding number of somewhat unusually placed lymph nodes. The latter is a particularly pertinent consideration in view of v Schumacher's conclusions and statement that hemal nodes without lymphatics are usually small; but that the larger hemal nodes usually possess lymphatics. Moreover, since v Schumacher explicitly stated that there are only two kinds of lymph nodes—those with, and those without lymphatics—he evidently uses the terms hemolymph node (Blutlymphdrüsen) and lymph node synonymously. From embryological evidence in my hands since half a decade, it is also clear that hemal nodes are not in connection with the lymphatics in their early development, and that lymph sinuses do not form in them at this time. Furthermore, from the numerous observations on the carcasses of sheep of all ages, of several scores of the new-born of many foetuses, it is evident that it is absolutely impossible to demonstrate the pre-natal or early post-natal presence of a comparable number of Anlagen of hemal nodes in the lumbar sub-vertebral region. This difficulty is apparently met by v Schumacher's suggestion that lymph nodes —among which he includes hemolymph nodes—probably continue to form in post-natal life.

Then there are, of course, the structural difficulties, especially those concerning the venous system, and the distribution and character of the so-called blood sinuses of hemal nodes, said to correspond to those of lymph nodes, which must be met by those who maintain a conversion of one type of node into the other. To be sure, I am fully aware that there are also difficulties and interrogations to be met by those who have been prompted to believe in the morphological identity of hemal nodes. The discussion of these will be reserved for a separate article on the hemal nodes of Bos taurus and Capra hircus.

APPENDIX

A short summary of other articles by the writer, on the subject of hemal nodes and related structures, is appended for the convenience of those who may not have access to all of them.

I. SUBCUTANEOUS AND SUB-PANICULAR HAEMOLYMPH GLANDS. *Anatomical Record,* vol. II, Nos. 1 and 2, May 1908.

Under this title a brief statement of a report given before the Association of American Anatomists in Chicago, in December 1907, was published with the proceedings of the society in the *Anatomical Record,* vol. II, nos. 1 and 2, May 1908. In this report it was stated that while engaged in an investigation of the hemal nodes of the sheep in the abattoirs of Minneapolis, where bovines were being simultaneously slaughtered, my attention was directed to nodes lying in the subcutaneous fat of the trunk of carcasses of bovines. These nodes were found to vary in number, from isolated specimens to approximately a score, and varied in size from one-half to one and a half centimeters. They were oval or circular in outline, and usually flattened laterally. It was stated that "In color they vary from a bluish black to a bright red or pale pink. They are usually firm, the blood cannot be expressed from them by pressure, and injections of India ink fail to reveal any lymphatic vessels. They are most numerous in young cattle, and were found in foetuses of twenty-two or more centimeters in length. In old cattle they are generally small or absent altogether.

"Their structure is very similar to that of the haemolymph nodes of sheep, and as wide variations in structure were found to exist. Such differences in structure as exist are minor, even in the case of developing glands. In the latter the occurrence of giant cells is particularly noticeable, and, as in the case of developing haemolymph nodes of the sheep, they arise from mesenchyme.

"In carcasses showing evidences of generalized tuberculosis, no change in these nodes was noticeable.

"No relation between the size and number of these nodes and any condition, save that of age, was observed, although such a relationship very likely exists."

II. The Haemolymph Glands of the Sheep. *Ibid.*

In this report, among other things it was stated that the earliest differentiation between the Anlagen of lymph and hemal nodes was observed in foetuses 9.8 cm. long, and that hundreds of injections from adjacent nodes, from the surrounding tissues as well as others made from the aorta and vena cava and from large lymph vessels and nodes, proved conclusively that the hemolymph nodes of the sheep are independent of the lymphatic system and are not intercalated in the veins. The following were some of the other conclusions stated there:

1. That the reticulum is not lined by endothelium.
2. That the circulation is an open one.
3. That the peripheral sinus and blood sinuses are not in direct connection with either the venous lacunae of Weidenreich or with the arteries, save developmentally.
4. That the peripheral sinus and blood sinuses are inconstant structures, while the venous lacunae are always present, even if not evident, on cross-section of a node.
5. That the arteries communicate with the venous lacunae, and that the latter communicate with each other and with the veins.
6. That the relation of the vein or veins to the node is an exceedingly variable one, and is frequently merely a contact relationship.
7. That small veins occasionally join the haemolymph nodes by penetrating the capsule near the periphery, and that these veins are afferent veins.
8. That it is easy to distinguish a haemolymph node from a lymph node by means of injection, and that it is equally easy to distinguish a venous injection from an arterial one.
9. That pigment is rarely found in haemolymph nodes, but frequently in lymph nodes.
10. That "mixed glands," *i. e.,* true haemolymph glands, were not found.
11. That the haemolymph nodes of the sheep, goat, and bovines are very similar in structure.
12. That, in view of these facts, the word haemolymph as applied to these nodes in the sheep is a misnomer, and that the term haemal node, suggested by Lewis, is to be preferred.

III. The Experimental Production of Hemolymph Nodes and Accessory Spleens. *Journal of Experimental Zoology*, vol. 16, 1914.

After a critical review of the literature on the above subject, the results of a series of experiments on guinea-pigs and dogs are recorded and discussed. No hemal nodes or accessory spleens were formed as result of splenectomy in young dogs, and no hemal nodes or reddened lymph nodes were produced in guinea-pigs by the repeated injection of toxine and other substances, or by a hundred or more successive withdrawals of blood in the sheep; but that changes may be produced in lymph nodes by repeated bleeding is suggested by the studies of Smith, indicating a lowering of the resistance of erythrocytes after the withdrawal of blood. However, it is more than likely that the amount and frequency of that loss are very important factors in the determination of the character and extent of the changes in lymph nodes; a conclusion which would also seem to be amply justified by Freytag's observations.

IV. Hemal Nodes in some Carnivora and Rodents. *Anatomischer Anzeiger*, Bd. 45, 1913.

An examination of a large series of cats and dogs of all ages failed to reveal any hemal nodes, other than supernumerary spleens, in these animals. Similar conclusions were also reached regarding mice, rats, guinea-pigs and rabbits, but as a result of an examination of a much smaller number of animals. The structural relation of supernumerary spleens and hemal nodes is also considered briefly, and the occurrence of mixed lymph and hemal nodes referred to. The retrogression of blood and chyle in the larger lymph vessels of the dog is reported, and its significance in the production of mixed nodes emphasized.

Errata in this article as published in the Anat. Anz.: Hemal Nodes in some Carnivora and Rodents. Studies on Hemal Nodes, III. *Anat. Anz.*, No. 12, Bd. 45, 1913.

P. 261, line 8—Delete the period.

P. 263, footnote reference (2)—Read Meyer, *Anat. Rec.*, Phila., 1914, instead of 1913.

P. 263, line 4—Read *obtained*, instead of *contained.*

P. 268, footnote reference (1)—Read Meyer, The Hemolymph Nodes of the Sheep. Studies on Hemal Nodes, I. University Publication, Stanford University.

P. 269, line 3—Read *these species.*

P. 271, reference 34—Line 2, add *der Milz* to the title.

V. THE OCCURRENCE OF SUPERNUMERARY SPLEENS IN DOGS AND CATS, WITH OBSERVATIONS ON CORPORA LIBERA ABDOMINALIS. *Anatomical Record,* vol. 8, 1914.

In view of the experiments of Tizzoni and other investigators of that period, and also for other reasons, it became necessary to possess reliable data regarding the occurrence of accessory spleens in dogs and cats, in connection with investigations on hemal nodes in the domestic animals. A series of careful examinations on 67 dogs and 82 cats of all ages showed that supernumerary spleens are present in 14.6 per cent of the cats, and that the number in a single animal may vary from one to approximately five hundred. The existence of peculiar pedunculated omental appendages—literally *appendices epiploicae*—was also reported, and the relation of these to the occurrence of *corpora libera abdominalis* discussed. Similarly 8.9 per cent of the dogs had supernumerary spleens, the number per animal varying from one to over eight hundred. The bearing of these facts on the results of the older experiments and on the occurrence of hemal nodes in these animals, is discussed critically. Several plates represent cross-sections and gross views of some of the specimens.

VI. HEMAL NODES IN *Bos taurus* AND *Capra hircus.* (In publication.)

In addition to a description of the hemal nodes of goats and bovines, special emphasis is placed on the subcutaneous and subpanicular nodes of *Bos taurus,* and on the development of the latter and of hemal nodes in general.

REFERENCES

1. Baum: Können Lymphgefässe direkt in Venen einmünden? *Anat. Anz.*, Bd. 39, 1911.

1*a*. Baum: Rote Lymphknoten. *Deutsch. Tierarzt. Wochenschr.*, 1907.

2. Clarkson, Arthur: Report on haemal glands. *Brit. Med. Jr.*, vol. 2, July 25, 1891.

3. Clarkson, Arthur: A text-book on Histology. Saunders, Phil., 1896.

4. Dayton, Hughes: Haemolymph nodes. *Am. Jr. Med. Sci.*, vol. 131, 1904.

5. Drummond, W. B.: On the structure and function of hemolymph glands. *Jr. Anat. and Phys.*, Lond., vol. 34, 1900.

6. Forgeot: Sur quelques particularités des ganglions hémolymphatiques des ruminants. *Comptes Rendus, Assoc. Anat.*, Nancy, 1909. Accessible in review only.

7. Forgeot: Sur quelques dispositions des ganglions hémolymphatiques des ruminants. Assoc. Française pour l'avancement des Sciences, 37e session. Clermont-Ferrand, 1908. Accessible in review only.

8. Gibbes, H.: On some structures found in the connective tissue between the renal artery and vein in the human subject. *Quar. Jr. of Microscop. Sci.*, Lond., vol. 24, 1883.

9. Gibbes, H.: Hemolymph glands. *Am. Jr. Med. Sci.*, vol. 106 (n. s.), 1893.

10. Haberer: Lien succenturiatus und lien accessorius. *Arch. f. Anat. u. Phys. Anat.*, Abt. 1901.

11. Helly, Konrad: Haemolymphdrüsen. *Ergeben. der Anat. u. Entwicklgsch.*, Bd. 12, 1912.

11*a*. Huntington: Ueber die Histogenese des lymphtischen Systems beim Säugerembryo. *Anat. Anz.*, Ergänzhft., Bd. 37, 1910.

12. Lewis, Thomas: The structure and function of the haemolymph glands and spleen. *Internat. Monatschrift. f. Anat. u. Phys.*, Bd. 20, 1902.

13. Lewis, Thomas: Observations upon the distribution and structure of hemolymph glands in mammalia and aves, including a preliminary note on the thymus. *Jr. Anat. and Phys.*, Lond., vol. 38, 1904.

14. Lewis, Thomas: Further observations on the functions of the spleen and other haemolymph glands. *Ibid.*

15. McCarthy, D. J.: The formation of haemolymph glands from adipose tissue in man. *Jr. Med. Research*, Boston, vol. 9, 1903.

16. McClure and Silvester: A comparative study of the lymphatic-venous communications in adult mammals. *Ant. Record,* Phil., vol. 3, 1909.

17. Meek, Q. O.: Some morbid histological changes met with in the lymphatic glands, especially in connection with the formation of haemolymph glands. *Quarterly Jr. Med.,* Oxford, vol. 3, 1910.

18. Morandi and Sisto: Contribution à l'étude des glandes hémolymphatiques chez l'homme et chez quelques mammifères. *Arch. ital. de Biol.,* vol. 35, 1901.

19. Retterer: Origine du plasma et de la lymph et hématies lymphatiques. *Jr. de l'Anat.,* T. 46, 1910.

20. Retterer: Sur les circonstances dans laquelles on obtient la disparition des hématies des ganglions lymphatiques ou leur stase dans les sinus de l'organe (gland hémolymphatique). *Comptes Rendus,* vol. 54, 1902.

21. Retterer: Sur les modifications que détermine l'abstinence dans les ganglions lymphatiques. *Ibid.*

22. Retterer: Structure et fonction des ganglions lymphatiques dans l'espèce humaine. *Ibid.*

23. Retterer et Lelièvre: Précède simple pour voir que le ganglion lymphatique possède des hématies. *Comptes Rendus Soc. Biol.,* T. 68, 1910.

24. Robertson, W. F.: The prevertebral haemolymph glands. *Lancet,* vol. 2, Nov. 29, 1890.

25. Saltykow: Über bluthaltige Lymphdrüsen beim Menschen. *Zeitschr. f. Heilk.,* 1900.

26. Silvester: On the presence of permanent communications between the lymphatic and venous systems at the level of the renal veins in adult South American monkeys. *Am. Jr. Anat.,* vol. 12, 1911.

27. v Schumacher: Bau, Entwicklung und systematische Stellung der Blutlymphdrüsen. *Archiv f. mikr. Anat.,* Bd. 81, 1912.

27*a*. v Schumacher: Ueber Blutlymphdrüsen. Verhandl. deutsch. Anat. Gesell. *Anat. Anz.,* Ergänzhft. 41, 1912.

28. Vincent and Harrison: On the hemolymph glands of some vertebrates. *Jr. Anat. and Phys.,* Lond., vol. 31, Jan. 1897.

29. Vincent, S: On haemolymph and haemal lymphatic glands. *Jr. Phys.,* Lond., vol. 22, 1898; *Proc. Physiol. Soc.,* p. XL.

30. Vincent, S.: The hemolymph glands of some vertebrates. *Jr. Anat. and Phys.,* Lond., vol. 31, 1896-97.

31. Warthin, A. S.: The normal histology of the human hemolymph glands. *Am. Jr. Anat.,* vol. 1, 1901.

32. Warthin, A. S.: The pathology of pernicious anemia, with special reference to changes occurring in hemolymph nodes. *Amer. Jr. Med. Sci.,* vol. 124, 1902.

33. Warthin, A. S.: A contribution to the normal histology and pathology of the hemolymph glands. *Jr. Boston Soc. Med. Sci.*, vol. 5, 1901.

34. Warthin, A. S.: The changes produced in the hemolymph glands of the sheep and goat by splenectomy, hemolytic poisons and hemorrhage. *Jr. Med. Research*, vol. 7 (n. s.), July, 1902.

35. Warthin, A. S: Are the haemolymph nodes organs *sui generis? Trans. Chicago Path. Soc.*, vol. 5, 1902.

36. Warthin, A. S.: Pseudomelanosis of the haemolymph glands. *Am. Jr. Med. Sci.*, vol. 128 (n. s.), 1904.

37. Weidenreich, F.: Studien über das Blut und die blutbildenden und zerstörenden Organe. *Arch. f. Mikr. Anat.*, Bd. 65, 1904.

38. Weidenreich, F.: Ueber Blutlymphdrüsen. *Anat. Anz.*, vol. 20, 1901.

39. White: Hemolymph glands in domestic animals. *Am. Jr. Anat.*, vol. 3, 1904; *Proc. Ass. Am. Anat.*, p. VIII.

DESCRIPTION OF PLATES

FIG. 1.—A small (5 mm.) oval hemal node supplied with two parallel veins whose contour suggests lymphatics. These veins gave off two branches, as indicated, and joined to form a single trunk of the usual appearance.

FIG. 2.—A node similar to that represented in fig. 1, with adjacent smaller nodes with veins of similar character.

FIG. 3.—A group of small discrete hemal nodes simulating a long, tortuous single node.

FIG. 4.—Appearance of the group of nodes shown in fig. 3 as seen in longitudinal section. Right half.

FIG. 5.—Hemal node injected with India ink from the vein by puncture from an adjacent node. This node contained many exceedingly large phagocytes shown as red dots all over the section, even in the follicles. All the ink lies in the venous radicles in the parenchyma.

FIG. 6.—Section of another node injected similarly to the one in fig. 5. Some pigment is free in the parenchyma and in the follicles, but very little is found in the hemal areas.

FIG. 7.—Hemal node adjacent to the thymus from a lamb 4-5 months old. Injected with carmine gelatine from the abdominal aorta. The injection is only a partial one, because the aorta was ligated proximally to the point of injection.

FIG. 8.—Camera lucida drawing of a small hemal node from a goat. The tributary veins are shown in section at the bottom and to the right, where they communicate directly with the peripheral venous lacunae but not with the subcapsular blood space. The lacunae—true venous sinuses—which are continuous, are bounded by an endothelial wall, and successive sections illustrate the relation of the veins to them and to the subcapsular blood space very clearly.

FIG. 9.—An injected lymph node from a lamb, showing the wholly different character of the injection as compared with those in figs. 5 and 6.

FIG. 10.—A hemal node from a goat, showing a vein and an artery which pass entirely through the node. Although the vein comes in contact with the hemal areas, it opens only into the parenchyma. Note the absence of a hilus, relation of the venous lacunae—clear spaces—to the hemal areas, and the relation of the latter to each other. Camera lucida.

FIG. 11.—Another section of the same node showing the artery in longitudinal section and the direct continuation of the subcapsular blood area into a peri-arterial one. Camera lucida.

FIG. 12.—Two veins tributary to the subcapsular blood space of a hemal node from the sheep. Camera lucida.

FIG. 13.—A portion of a node injected with India ink from an adjacent node. The pigment lies in the lymphatic tissue, and has not invaded the large blood space which it surrounds. x 290.

FIG. 14.—A cross-section of a node largely depleted of lymphatic tissue, and containing very many follicles and numerous large veins.

Note—Please view figures 6, 9 and 18 with a reading glass.

FIG. 15.—A node in which the hemal area is large and continuous, and in which the remaining lymphatic tissue is found chiefly at the periphery.

FIG. 16.—A portion of an almost empty node in which all the venous radicles or lacunae are found surrounded by lymphatic tissue. A few of these communicate directly with the large hemal area, which contains little blood and many fragments of erythrocytes. This node is subdivided more or less completely by thick connective tissue septa.

FIG. 17.—Camera lucida drawing of a node containing but little lymphatic tissue, at the periphery of which a large, almost continuous lacuna is seen.

FIG. 18.—A section of an almost depleted node, showing the characteristic distribution of the lymphatic tissue with the contained venous lacunae.

FIG. 19.—A section of a similar node. The entire absence of follicles and the profoundly modified architecture suggest that such nodes are disappearing.

FIG. 20.—A small portion of a hemal node, showing a venous lacuna opening directly into the parenchyma at the left, where the degenerating erythrocytes and a large phagocyte lie. x 410.

FIG. 21.—A large venous lacuna containing granular detritus and surrounded by hemal areas composed almost wholly of excellently preserved erythrocytes, which are everywhere separated from it by definite walls and a narrow border of lymphatic tissue. x 920.

FIG. 22.—A partially collapsed venous lacuna, showing a definite endothelial wall on one side and a barrier of lymphatic tissue on the other, separating it from the surrounding hemal areas. x 920.

FIG. 23.—A rare section showing the communication of a capillary with a venous lacuna. x 750.

FIG. 24.—A section through a process of lymphatic tissue containing a large hemal area, which projects into a large venous lacuna or sinus. There is no direct communication between the latter and the hemal area anywhere. x 630.

FIG. 25.—A portion of a large hemal area containing abundant and coarse reticulum. In many places the reticulum fibers have no doubt been forced together. x 630.

FIG. 26.—A portion of a node showing the accumulation of eosinophiles around the artery. Several degenerating giant cells are also seen. x 1340. p. 61.

August 25, 1913.

FIG. 1

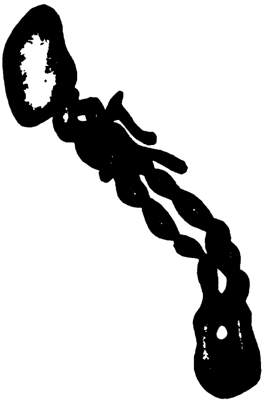


FIG. 2

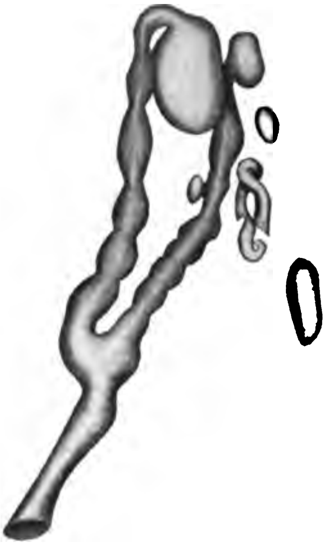


FIG. 3

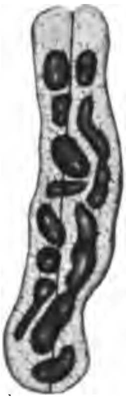
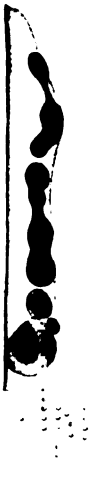
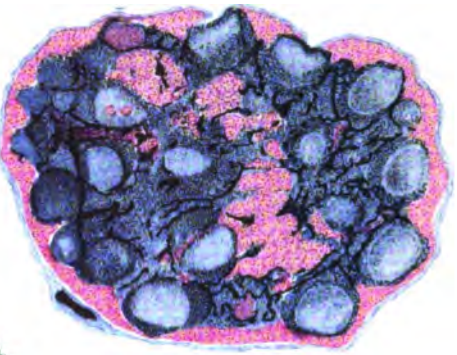


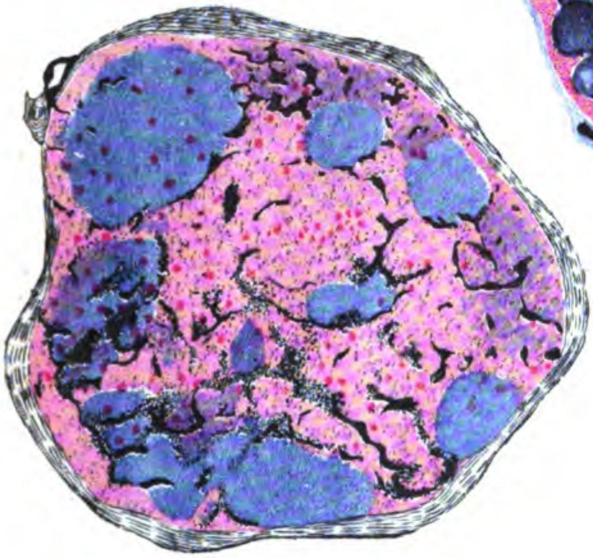
FIG. 4



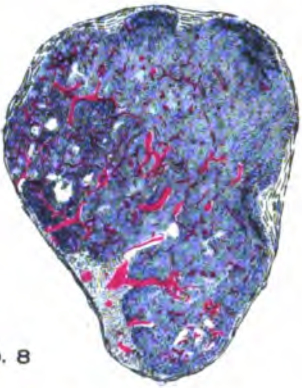
No. 6



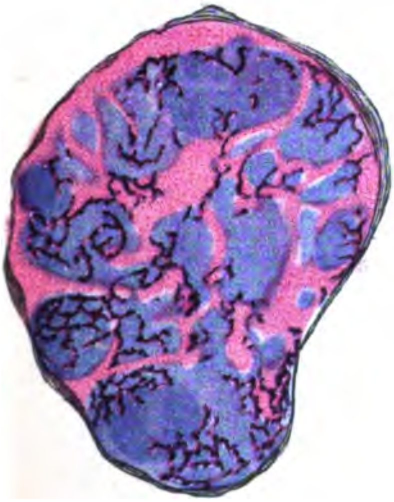
No. 5



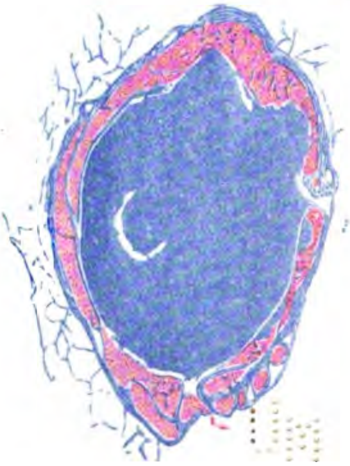
No. 9



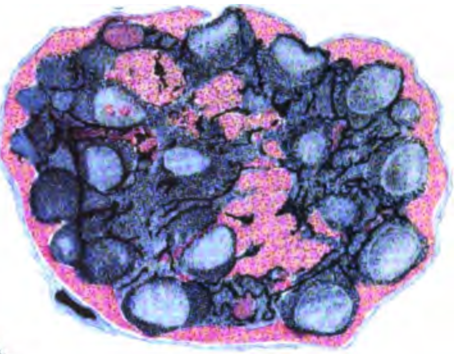
No. 7



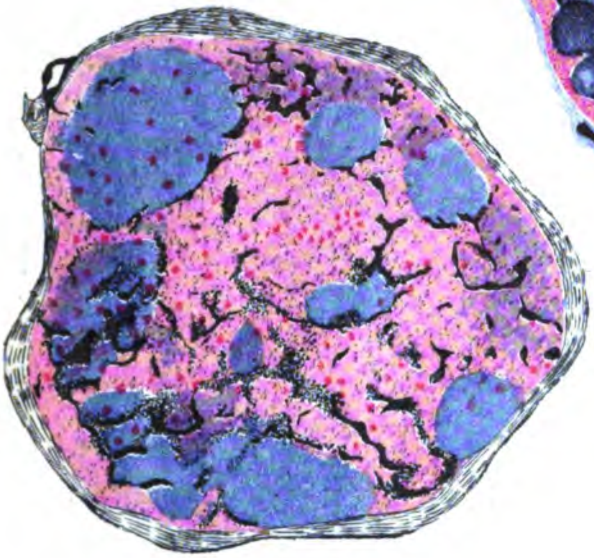
No. 8



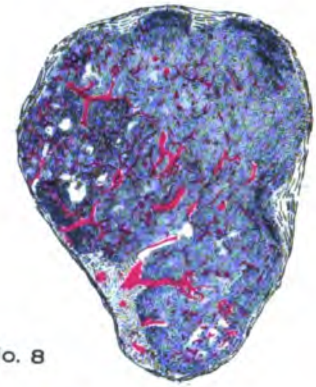
No. 6



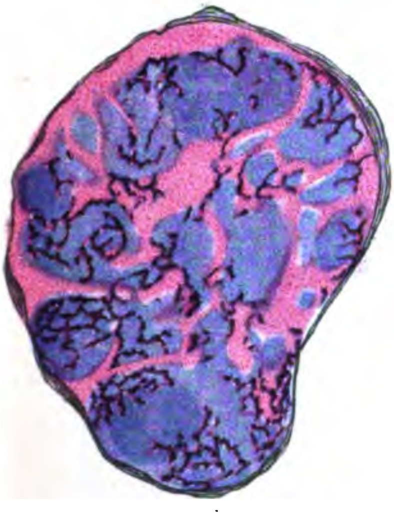
No. 5



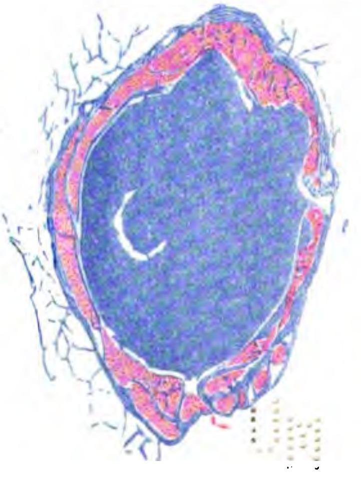
No. 9



No. 7

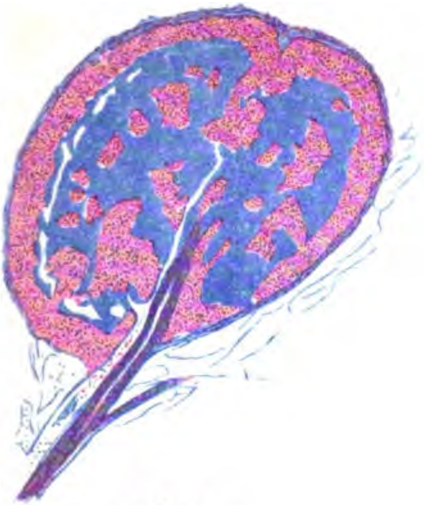


No. 8

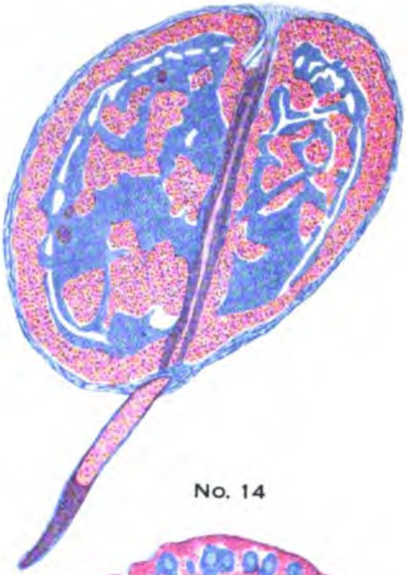


MU

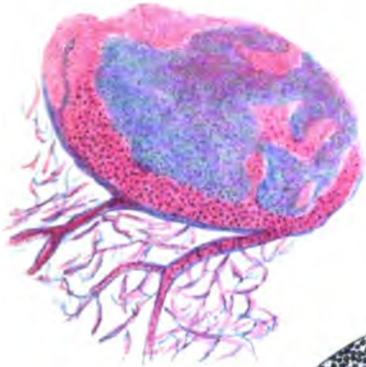
No. 10



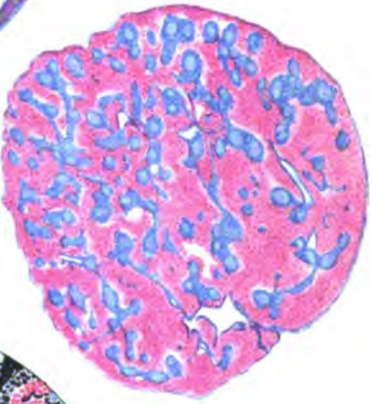
No. 11



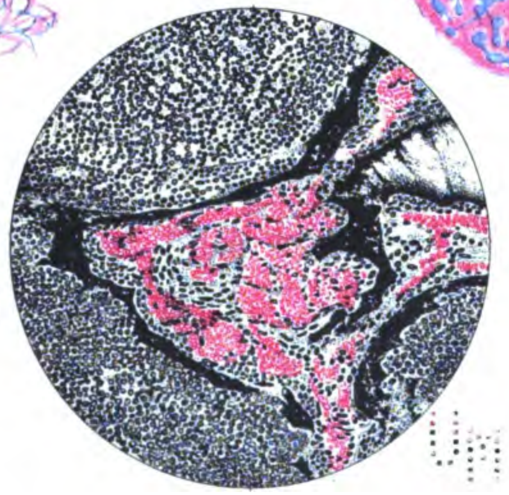
No. 12



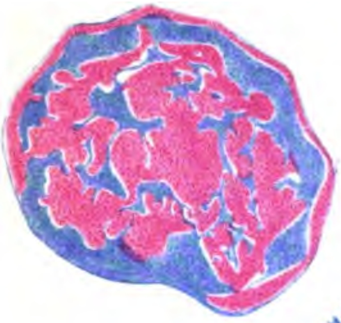
No. 14



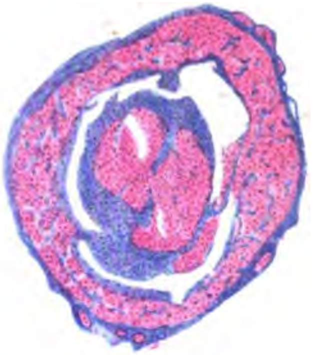
No. 13



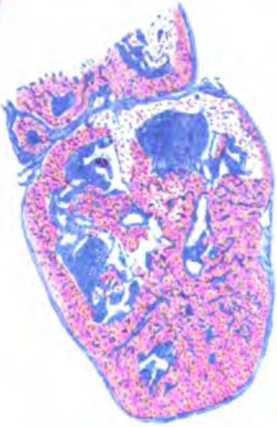
No. 15



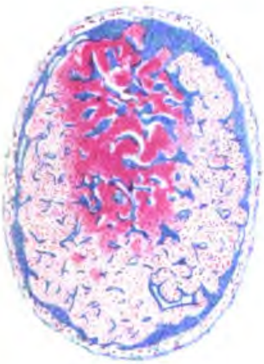
No. 17



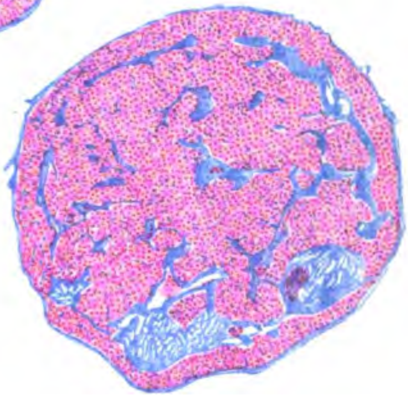
No. 16



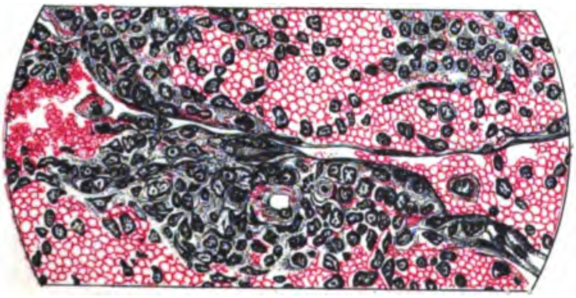
No. 18



No. 19

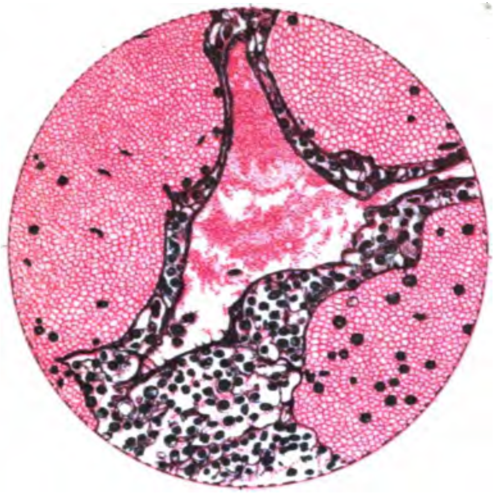


No. 20

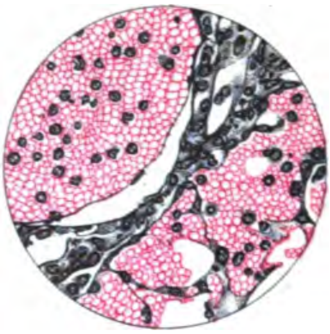


MU

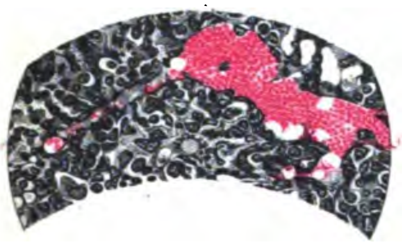
No. 21



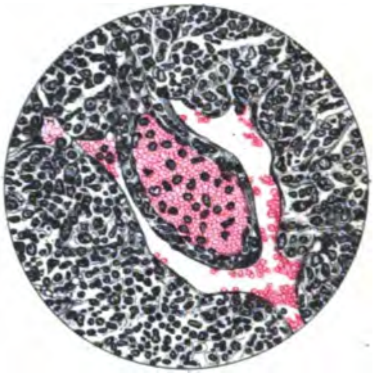
No. 22



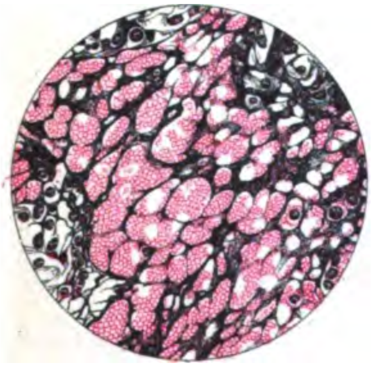
No. 23



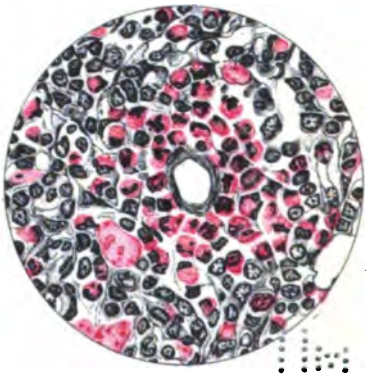
No. 24



No. 25



No. 26



MU

378.73
L54J
P9

cat

LELAND STANFORD JUNIOR UNIVERSITY PUBLICATIONS
UNIVERSITY SERIES

18.

AN INTRODUCTION TO THE STUDY OF THE ENDOCRINE GLANDS AND INTERNAL SECRETIONS

LANE MEDICAL LECTURES, 1913

Sharpey-Schafer, Sir Edward Albert

BY

SIR EDWARD SCHÄFER
REGIUS PROFESSOR OF PHYSIOLOGY
UNIVERSITY OF EDINBURGH

STANFORD UNIVERSITY, CALIFORNIA
PUBLISHED BY THE UNIVERSITY
1914

UNIVERSITY SERIES

INHERITANCE IN SILKWORMS, I. Vernon Lyman Kellogg, Professor of Entomology. 89 pp., 4 plates. 1908. Price $1.00.

THE OPISTHOBRANCHIATE MOLLUSCA OF THE BRANNER-AGASSIZ EXPEDITION TO BRAZIL. Frank Mace McFarland, Professor of Histology. 105 pp., 19 plates. 1909. Price, $1.00.

A STUDY OF THE NORMAL CONSTITUENTS OF THE POTABLE WATER OF THE SAN FRANCISCO PENINSULA. John Pearce Mitchell, Assistant Professor of Chemistry. 70 pp., 1 map. 1910. Price, 50c.

SYNOPSIS OF THE TRUE CRABS (BRACHYURA) OF MONTEREY BAY, CALIFORNIA. Frank Walter Weymouth. 64 pp., 14 plates. 1910. Price, 50c.

THE OSTEOLOGY OF CERTAIN SCOMBROID FISHES. Edwin Chapin Starks, Assistant Professor of Zoology. 49 pp., 2 plates, 1 text figure. 1911. Price, 50c.

A PHYSICAL THEORY OF ELECTRIFICATION. Fernando Sanford, Professor of Physics. 69 pp., 2 plates. 1911. Price, 50c.

THE MATZKE MEMORIAL VOLUME. Papers by John Ernst Matzke, late Professor of Romanic Languages, and Thirteen Colleagues. 162 pp. 1911. Price, $1.00.

DAS HISTORISCHE PRASENS IN DER ALTEREN DEUTSCHEN SPRACHE. Bruno Boezinger, Assistant Professor of Germanic Languages. 91 pp. 1912. Price, 50c.

THE EFFECT OF A STRICTLY VEGETABLE DIET ON THE SPONTANEOUS ACTIVITY, THE RATE OF GROWTH, AND THE LONGEVITY OF THE ALBINO RAT. James Rollin Slonaker, Assistant Professor of Physiology. 36 pp., 1 plate, 15 text figures. 1912. Price, 50c.

CATALOGUE DE TOUS LES LIVRES DE FEU M. CHAPELAIN. (Bibliothèque Nationale, Fonds Français, Nouv. Acq., No. 318.) Colbert Searles. Associate Professor of Romanic Languages. 119 pp., 2 plates. 1912. Price, 75c.

THE DUDLEY MEMORIAL VOLUME. Papers by William Russel Dudley, late Professor of Botany, and Several Colleagues. 137 pp., 12 text figures, 9 plates. 1913. Price, $1.00.

THE FISHES OF THE STANFORD EXPEDITION TO BRAZIL. Edwin Chapin Starks, Assistant Professor of Zoology. 77 pp., 15 plates. 1913. Price, 75c.

(*Continued on third page of cover.*)

LELAND STANFORD JUNIOR UNIVERSITY PUBLICATIONS
UNIVERSITY SERIES

AN INTRODUCTION TO THE STUDY OF THE ENDOCRINE GLANDS AND INTERNAL SECRETIONS

LANE MEDICAL LECTURES, 1913

BY Albert Sharpey-
SIR EDWARD SCHÄFER
REGIUS PROFESSOR OF PHYSIOLOGY
UNIVERSITY OF EDINBURGH

STANFORD UNIVERSITY, CALIFORNIA
PUBLISHED BY THE UNIVERSITY
1914

Leland Stanford Junior University Library 2-25-159.

CONTENTS.

PAGE

Lecture I.—General considerations regarding internal secretions and the organs which furnish them 5

Lecture II.—The functions of the thyroid apparatus 15

Lecture III.—The functions of the adrenal apparatus 34

Lecture IV.—The pituitary body or hypophysis cerebri . . . 53

Lecture V.—The internal secretions of the pineal gland; of the alimentary mucous membrane; of the pancreas; and of the sexual organs 79

An Introduction to the Study of the Endocrine Glands and Internal Secretions

Sir Edward Shäfer

LECTURE I.

GENERAL CONSIDERATIONS REGARDING INTERNAL SECRETIONS AND THE ORGANS WHICH FURNISH THEM.

Material which is passed into the blood or lymph from any tissue or cell of the body forms what has been termed its *internal secretion,* and organs which are not known to possess any other function than that of passing such material into the blood or lymph are termed *internally secreting* or *endocrine organs.** But this term is not usually extended to organs like the lymphatic glands of which the material production is of a morphological character, although until recently all such organs used to be included along with the true endocrine glands, the functions of which were at that time unknown, in the general expression of *ductless glands.* Under this last term were comprised not only the thyroid (to which must be added the parathyroids), the suprarenal capsules or adrenals, the pituitary body or hypophysis cerebri, and the pineal gland or epiphysis cerebri, to which we now commonly ascribe internally secreting functions, but also the thymus gland, the tonsils, lymph-glands and lymph-follicles, and the spleen; with these the bone-marrow must also be associated. Regarding the thymus gland, although some evidence has been adduced that it may yield an internal secretion to the blood which exercises a specific action upon the functions of growth and development, especially of the generative organs, it appears both developmentally and structurally to present undoubted resemblance to the tonsils, which are universally allowed to be structures of a lymphatic nature, and most of its cells are lymphocytic in character. Some have supposed that the spleen also provides an internal secretion which is destined to affect the quantity of the pancreatic juice. But the proof of the existence of such internally secreting functions in connexion with these lymphoid organs is so inferior to that which we possess regarding the thyroid, parathyroids, adrenals and pituitary, and even the pineal gland, that we may, at least provisionally, exclude them from the class of organs which are known to secrete active chemical agents into that fluid for the purpose of influencing other organs. It is to this latter class that I intend to restrict my remarks, and it is to them and them alone that the term "endocrine organ" will be applied in these lectures.

---

*From *ἔνδον,* within, and *κρίνω,* to separate.

It follows from what has just been said that by the expression "endocrine gland" we imply an organ which is known to form some specific chemical substance within its cells and to pass this directly or indirectly into the blood stream. The substance thus formed is the active material of its secretion, just as ptyalin is the active agent of the salivary secretion. But while in the case of the salivary glands the secretion is conducted by a duct to the exterior, in the case of the ductless glands the secreted material remains within the body and circulates with the blood; hence the term "internal secretion" commonly applied to it.

The expression "internal secretion" was originally applied in a sense somewhat different from that in which it is now used, having been first employed by Claude Bernard to describe the grape sugar which, as he showed, is passed from the liver cells into the blood. It has also similarly been used to designate all materials which are contributed to the blood by the tissues. In this manner the carbon dioxide and other products of metabolism which are taken up by the blood in its passage through the capillaries or are received by it through the medium of the lymph stream would be internal secretions and every tissue would be an internally secreting structure. It is, however, convenient to restrict the term "endocrine" to substances of a specific nature like the active chemical agents which are produced by the ductless glands, and this is the sense in which the expression will be employed in these lectures.

But it is proved that the production of specific chemical agents which are passed into the blood and carried by it to distant structures is not confined to the ductless glands—that an active internal secretion may be produced by other organs than these. A notable example is met with in the case of the pancreas, the obvious and long known function of which is the production and excretion into the intestine of pancreatic juice; which, by virtue of the ferments it contains, is the most active agent in the digestion of food stuffs within the alimentary canal. In 1889, however, it was shown by v. Mering and Minkowski that the pancreas possesses an internal secretory function which is of even greater importance in the economy than its long recognized external secretory activity. For by totally removing the pancreas in animals these observers proved that the presence of the gland and of some material yielded by this gland to the blood is essential to the proper utilisation of carbohydrate material in the tissues, so that if the organ be removed grape sugar is no longer stored in the liver, and little by little split up by the organism into simple oxidisable substances, but is passed out from the blood in which it is in excess by the kidneys, thus producing glycosuria. It may be added that our present knowledge of the etiology of diabetes is mainly based on these observations.

Now it is known that the pancreas possesses, besides the secreting alveoli which form the enlarged and blind terminations of its ducts, a special kind of secreting cells which are massed together into islets of irregular shape and variable number and size, having a special kind of blood supply. These islets, which were first described as a distinct element of pancreatic tissue by Langerhans, have been originally developed from and may retain a connexion with the ducts of the organ, in this respect resembling the ordinary alveoli. But in the course of growth they have lost all open connexion with the ducts; their cells have acquired specific properties; and their function is without doubt different from the ordinary cells of the gland. With some show of reason the special internal secreting function which has been above mentioned has been ascribed to them, and in support of this it may be stated that in many if not most cases of diabetes these cells are found to have undergone degeneration. They in fact form an organ within an organ, and may be collectively regarded as belonging to the group of internally secreting or endocrine organs.

An example of a tissue which is devoted to the formation of both an external and an internal secretion is found in the epithelium which lines the duodenum. The functions of this epithelium which have been longest known are those of aiding in the absorption of digested food materials and of helping to furnish the material known as the intestinal juice. But in 1902 it was discovered by Bayliss and Starling that if an extract of the duodenal epithelium is boiled with dilute hydrochloric acid and after neutralization is injected into the blood stream of an animal a rapid flow of pancreatic juice is determined. It had already been known that the gush of acid gastric juice through the pylorus or the painting of the mucous membrane of the duodenum with dilute acid would determine a flow of pancreatic juice, but this flow had been supposed to be brought about as a reflex act by excitation of a local nervous mechanism by the acid. The observations of Bayliss and Starling rendered it clear, however, that this is not the correct explanation of the phenomenon; but that the flow must rather be regarded as due to the absorption of some internal secretion into the blood: the material of this internal secretion being produced in an inactive form by the epithelium cells and becoming so altered by the dilute acid as to be converted into an agent which, after absorption into the blood stream, excites the secreting cells of the pancreas to activity.

To the active substance which is yielded by the epithelium cells of the duodenal mucosa the name *secretine* was given by Bayliss and Starling, whilst they termed *pro-secretine* the inactive material contained within the cells before the action of dilute acid upon them. The active material is obviously of the nature of an internal secretion; it appears, however, not to be produced by a special structure, certainly not by a special organ; but so far as one can tell, by the ordinary cells which line the mucosa and extend into its glands.

A similar but not identical internal secretion has been shown by Edkins to be produced by the cells of the mucous membrane of the pyloric end of the stomach. When rendered active and absorbed into the blood this secretion, which is termed *gastrine* by Edkins, stimulates not the cells of the pancreas but those of the fundic glands of the stomach itself.

A yet more remarkable example of the coincidence of external and internal secretory functions in the same organ is supplied by the generative glands (ovary and testicle). It has been known from time immemorial—the experiment is repeated daily for commercial purposes in thousands of animals, and is still practiced upon man for domestic reasons in certain Oriental countries—that the removal of the generative glands in the young male animal usually entirely prevents the development of the accessory generative organs, such as the prostate, and of the features which characterize the male sex externally. These changes may be prevented by successfully grafting a testicle in the castrated animal.

Again, removal of the ovaries in the young female exerts a profound influence over the organism and prevents the development of many female characteristics. In some cases, even in the adult, removal or atrophy of the ovaries has been noticed to lead to the development of male characters. Instances of this have been often recorded in birds. In young mammals removal of the ovaries is followed by arrest of development of the uterus. This may be prevented by successfully transplanting the ovaries or by grafting an ovary from another animal of the same species into the peritoneum or elsewhere. It seems clear, therefore, that the result of removal is due in both male and female to the absence of the internal secretion of the generative gland.

THE NATURE AND MODE OF ACTION OF THE ACTIVE PRINCIPLES OF THE INTERNAL SECRETIONS.

We have compared the active materials of the internal secretions, which are formed within cells and passed out into the blood, to the active agents of the ordinary secretions, which are directed on the exterior by means of a duct. But the comparison cannot be pressed. In the case of the external secretions, the active agents when present are always of the nature of a ferment. They belong to the class of bodies which are known as *enzymes*. The conditions and modes of action of these bodies are for the most part familiar to the biologist. They occur not only in secretions but in the bioplasm of most if not of all cells; indeed the chemical activity of the cell in most if not in all cases depends upon its contained enzymes. Although far simpler in chemical nature than the bioplasm by which they are produced, and in no sense endowed with life, enzymes are very probably of a protein nature, and they are readily destroyed by heat in presence of water. The active materials of the internal secretions, on the other hand, are for the most part not rendered inactive even by prolonged boiling, and are certainly of a much simpler chemical constitution than enzymes. They are dialyzable; and although most of them have not yet been isolated in a crystalline form, due probably to the fact that it is difficult to obtain them free from impurities, some of them have been so obtained, and at least one—the active material of the adrenal medulla—has been prepared synthetically. They for the most part act readily upon the cells which they influence—at least this is the case with those which can be extracted by water from the organs which produce them—and the extracts often exert an immediate effect when injected into the blood; whereas it is usually the nature of an enzyme to operate more gradually. The action of the principles contained in the internal secretions and capable of extraction by watery fluids is in point of fact not very dissimilar from that produced by the active principles of drugs, especially those of organic, i. e., of vegetable origin. These also operate by immediate chemical action, being conveyed to the parts which they influence in solution in the circulating blood. As with drugs, some of the principles contained in such extracts of the endocrine organs act by stimulating or exciting cell-functions: this is notably the case with the principle obtained by the action of acid on the duodenal epithelium. Others depress or inhibit those functions: an example of this is met with in extract of placenta, which when injected into the bloodvessels tends to inhibit the secretion of milk. To such stimulating principles, as that contained in the extract of duodenum after treatment with acids, the term *hormone* (from ὁρμάω, to stir up) was originally applied by Starling,[*] and the expression has been extended to include the active principles of all internal secretions. As long as only exciting agents were known there could be no objection to this extension of the term, but since agents which produce depression or cessation of function have been shown also to be produced in the endocrine glands—and their number will probably become considerable as the nature of the internal secretions is more fully examined—it is advisable to employ an expression which will discriminate between these and stimulating agents. I propose therefore to distinguish the action of the depressants from that of the excitants by the use of the term *chalone* (from χαλάω, to make slack). A *chalone* may therefore be defined as an endocrine product which inhibits or prevents the activity of an organ or tissue, as distinguished from a *hormone*, which excites the tissue to increased activity.*

---

[*] Verhandl. 1.

Starling does not, however, confine the use of the term "hormone" to organic principles of an endocrine nature. His definition is much wider. "By the term 'hormone,' " he says, "I understand any substance normally produced in the cells of some part of the body and carried by the blood stream to distant parts, which it affects for the good of the organism as a whole." (*Proc. Roy. Soc. Med., Vol. vii., Therap. and Pharm. Sect., p. 29*). He then proceeds to give as examples of hormones, secretine, adrenine, and carbonic acid—the last, which is produced by the tissues in general and more especially by muscular tissue, stimulating the respiratory centre to activity. Obviously this definition would include most substances normally present in the blood, such as water, urea, glucose and inorganic salts, which are produced in various parts of the body and affect distant organs such as the kidneys: indeed it may be supposed that all substances in the blood will, when we know more about their history, come into the definition. The expression *hormone* has not been hitherto employed by physiologists and clinicians in this extended sense; the term has invariably been restricted to the active organic principles of the internal secretions. But it will be best to employ the term *hormone* in the sense in which it is used by its inventor, i. e., to denote any substance in the blood which excites cells of the body to activity, and to denote by a special term those specific substances which are produced by the organs of internal secretion for the purpose of either exciting or restraining the activity of distant organs. Since the most characteristic feature of the action of these substances is the resemblance to the action of drugs, such as the vegetable alkaloids, I propose to employ for these specific substances the general title "autacoid substances," or, simply, "autacoids" (*ἀυτός*, self, and *ἄκος*, a medicinal agent or remedy). I would accordingly define an autacoid as a specific organic substance formed by the cells of one organ and passed from them into the circulating fluid to produce effects upon other organs similar to those produced by drugs. Such effects are either in the direction of excitation, in which case the endocrine substances producing them may be termed *excitatory autacoids* and would come under the expression "hormones," or in the direction of restraint or inhibition, in which case they may be termed *restraining* or *inhibiting autacoids* and be classed as "chalones." And the action of an autacoid may be described as *hormonic* or *chalonic*, according to the kind of effect it produces.

---

*The original expression employed by Bayliss and Starling (Journ. Physiol.) in their paper on secretine was "chemical messenger." This is more appropriate as a general term than "hormone" because it includes all chemical agents which produce an effect at a distance, whether such effect be excitatory or inhibitory. If, in place of "hormone," Starling had selected the expression "hermone" ('Ερμῆς, Mercury), the difficulty which is caused by the use of the term "hormone," which implies excitation, for agents which act in exactly the contrary manner, would not be felt. Biedl distinguishes "erregende Hormonen" from "hemmende Hormonen," i. e., excitants which excite, from excitants which prevent excitation. It is true that he regards the one class as exciting katalobic changes and the other as exciting anbolic changes, but this is purely theoretical, and in many cases it is improbable that this is their mode of action.

Some autacoid substances appear to produce opposite results in different parts of the body. Thus the adrenine of the suprarenal medulla causes contraction of the plain muscle of the bloodvessels and inhibition of that of the intestines. But in both cases the action may be regarded as that of a hormone or exciting agent, for both effects are produced by stimulating the end substance of the sympathetic nerves. In extreme dilution (1 to 1,000,000 or less) in mammals, and in a less dilute form in birds. adrenine causes inhibition instead of contraction of the muscle of the bloodvessels. But this again may be produced by excitation of inhibitory nerve fibres by the more dilute solution, and if so the action would still be hormonic. Nevertheless, the possibility of the same autacoid substance acting under some circumstances as a hormone or excitant and under other circumstances as a chalone or depressant must be borne in mind. This indeed serves to illustrate the drug-like nature of these principles, for such inversion of action under different circumstances is known to occur with some alkaloids.

Groupings of the Chief Endocrine Glands.

The principal ductless or endocrine glands can be grouped under the three main heads of *thyroid apparatus, suprarenal apparatus* and *pituitary* or *hypophysial apparatus.* With regard to these groups, it is noteworthy that each of the organs forming the group is compounded of two distinct, but usually closely intergrown parts. Thus the thyroid apparatus is composed of thyroid proper and parathyroids; the suprarenal of cortical and medullary fine tissues; the pituitary of epithelial and epithelio-neural portions. And in each case the functions of the two portions, so far as is known, appear to be in no way related, difficult as it is to believe that tissues so closely connected anatomically should have no sort of functional connexion. The close anatomical connexion is, however, sometimes absent, as with those parathyroids which are altogether detached from the thyroid and as with the paired bodies and the interrenal body of the Elasmobranch fishes. A close anatomical relationship without any known functional bearing is, however, not without examples in other organs, e. g., in the frog there exists a very intimate anatomical connexion of the suprarenal with the kidney, although there is no reason to believe that any special functional relationship obtains between the two.

It is further noticeable that in each of the above groups one of the two parts has a more evident and in a sense a more active function than the other. Thus the removal of the parathyroids occasions symptoms which are far more acute than those produced by the corresponding operation on the thyroid alone. And extracts of the medullary substance of the adrenals and of the posterior or epithelio-neural part of the pituitary have an immediate and striking effect on various tissues and organs when injected into the bloodvessels, whilst similar extracts of the cortical substance of the adrenals or of the anterior or epithelial part of the pituitary are without any obvious action. There is, however, in the case of the thyroid, direct experimental as well as clinical evidence, and, in the case of the suprarenal capsules and pituitary, the testimony of much clinical observation to furnish reason for the belief that the portions of these glands extracts which are inactive when injected into the blood may exercise, if a slower, yet a no less potent influence upon the organism than the portion the activity of which can be demonstrated by intravenous injection.

METHODS OF DETERMINING THE FUNCTIONS OF THE DUCTLESS GLANDS.

Two general methods are employed for this purpose, the one being the observation of the changes which result from partial or complete surgical removal of the organ in man and animals or its destruction by disease, and the other, observation of the changes which result from the administration of watery or saline extracts prepared from the organ. As has been already stated, the active principles of the endocrine glands are not destroyed by boiling with water or Ringer's solution, at least for a short time. Advantage is taken of this fact to prepare extracts which are free or almost free from protein or nucleo-protein, since the introduction of these substances into the blood might tend to mask the effect of the autacoid which is being tested. In this way solutions may be prepared, and kept, after sterilization, in hermetically sealed receptacles almost indefinitely. Preserved in the dry condition also the autacoids appear to undergo no diminution of their activity. In these particulars animal autacoids resemble extracts of plants containing active medicinal principles of an organic nature, with the action of which, as has already been indicated, the effects they produce bear a close comparison.

The extracts can be administered by the mouth, or by subcutaneous, or intramuscular, or intraserous, or intravenous injection. The last mentioned method, viz., injection into a vein, being the most direct, is the one generally resorted to for the determination of their action. It was first employed to investigate the physiological action of such extracts in 1894, and led immediately to the discovery of the bloodpressure-raising principles of the suprarenal capsules and of the pituitary body.

Administration by the mouth.—This is well known to be effective in the case of the thyroid and the fact is taken advantage of in cases of hypothyroidism such as occurs in endemic goitre, cretinism and myxœdema. On the other hand, thyroid juice or the substance of the gland given freely with the food in normal individuals produces symptoms which are interpreted as due to excess of the thyroid autacoids in the blood. With smaller doses certain effects are produced upon metabolism, including an increase of N-secretion and an increase of O_2 intake and of CO_2 excretion, with the reduction of body fat. Buccal administration is stated by Cushing to yield good results with pituitary extracts or pituitary gland substance in cases of hypopituitarism, although in normal individuals no effect is apparent. Buccal administration of suprarenal extract also gives little result in normal individuals, but both in Addison's disease and in certain other affections beneficial effects have frequently been recorded when the extract has been thus administered.

Administration by subcutaneous or intramuscular injection.—As with drugs the effects of administering the animal autacoids by hypodermic injection are usually more rapid and more marked than with buccal administration. But in some cases the difference is not very striking so far as immediate results are concerned. If, however, extract of the medulla of the suprarenals or of the posterior lobe of the pituitary body are administered by intramuscular injection—absorption being promoted by gentle massage—they rapidly cause their characteristic effects (Meltzer and Auer). Probably the reason why these extracts when given by hypodermic injection produce little general result—although the local effects in causing vasoconstriction may be very marked—is that the autacoid is rapidly destroyed in the body; so that when absorbed slowly it is got rid of before any excess is able to accumulate in the blood. This applies only to moderate doses and to the immediate effects. Secondary effects may be seen with large doses, and these may be of a marked character.

Intravenous injection. The immediate effects—if any—of the animal autacoids are, as with drugs, unfailingly exhibited as the result of the injection into a vein of the extracts containing them. In this manner can be shown the action of extract of thyroid in causing a marked but evanescent depression of the bloodpressure and in affecting the excitability of the depressor nerve: the various effects of extract of suprarenal medulla; such as contraction of bloodvessels with raising of bloodpressure, acceleration of the heart, sometimes preceded or followed by inhibition, flow of saliva, erection of hairs, dilatation of pupils, retraction of third eyelids, and protrusion of eyeballs, contraction of uterus, vas deferens and seminal vesicles, inhibition of gastric and intestinal movements and of the bladder: as well as those produced by extracts of the posterior lobe of the pituitary, such as contraction of the bloodvessels with slowing of the heart, increase of secretion from the kidneys, outflow of milk from the mammary gland, contraction of the uterus, of the intestines, and of plain muscle in general.

A caution must here be entered against the too hasty conclusion that a particular effect obtained in injecting an organ extract is a specific effect due to the autacoid substance. Especially is this warning necessary in experiments in which the bloodpressure is employed as the gauge of activity. For there are few organs which yield extracts that are absolutely inert when tested by intravenous injection. This applies to many glandular and lymphatic structures, extracts of which cause generally a rapid fall of bloodpressure, which is, however, usually speedily recovered from, but sometimes—as with kidney extracts—a more or less distinct and prolonged rise. The depressor effect seems often to be dependent upon the presence of nucleo-protein in the extract and is usually greater in proportion to the number of nucleated cells which the organ contains. Sometimes it may be due to the presence of choline. The pressor effect sometimes seen is also probably not specific. Whatever produces it is not of the nature of ordinary autacoids; it differs from these in being destroyed by boiling.

Extracts of various animal tissues—especially if unboiled—are liable to produce intravascular clotting. If this be general, instant death is the result; if localized, it may manifest itself by serious interference with the functions of the nervous system or of other organs: and the result of such injection might erroneously be set down to a specific action of the extract injected, although it would obviously only represent the result of an accident. A similar caution applies, although in a minor degree and for a different reason, to effects obtained as the result of buccal and hypodermic administration of animal-extracts, for such effects—especially differences caused by different extracts—may (unless they can be otherwise proved to be specific) be produced by variations in amount of such organic substances as nucleo-protein or other nutritive materials which may affect growth and metabolism, when added to the ordinary diet of animals.

LECTURE II.

THE FUNCTIONS OF THE THYROID APPARATUS.

This apparatus consists (1) of the thyroid proper, in the form of two lobes (generally united in man by an isthmus over the trachea) situated on either side of the larynx and windpipe, and (2) of the parathyroids; two on each side: one—the superior (parathyroid IV), which is usually in contact with the corresponding lobe of the thyroid near its dorsal aspect*, whilst the other—the inferior (parathyroid III), lies either in contact with the corresponding lobe of the thyroid at its ventral aspect or is removed a greater or less distance from it, sometimes as low down as the thymus.

The thyroid may contain embedded in its substance a portion of tissue resembling that of the thymus gland, and, like that, containing lymphocytes and corpuscles of Hassall. Such portion of thymus tissue is developed from the same branchial cleft (IV) as the superior parathyroid, whereas the main thymus is developed from cleft III. Accessory thyroids, usually quite small, occasionally occur in the tissues of the neck and in the anterior mediastimum.

STRUCTURE AND DEVELOPMENT OF THYROID.

The thyroid proper is an organ consisting of small closed vesicles of varying size and shape, but for the most part spheroidal. Each vesicle is lined by epithelium which is usually cubical; but the cells may be columnar or flattened in accordance with the state of distension of the vesicles. There is no definite basement membrane separating the epithelium from the connective tissue and bloodvessels. The vesicles are generally filled by the so-called "colloid," a viscid fluid in the fresh organ, which is coagulated into a solid substance by fixative reagents. The intervesicular substance is areolar tissue, containing in parts many small cells. Some of these are lymphocytes whilst others are not unlike those of the parathyroids, although the identity has not been established. There are also very numerous bloodvessels, the thyroid being one of the most vascular organs in the body, receiving in proportion to its size more than five times as much blood as the kidneys. The capillaries penetrate as far as the vesicular epithelium with which they come into immediate contact. There are numerous lymphatics within the organ, and "colloid" like that of the vesicles is said to be occasionally seen within them. The gland receives nerves from the sympathetic and from the vagus through the superior and inferior laryngeal: the nerves are distributed both to the bloodvessels and to the secreting epithelium.

---

*In some animals this parathyroid is embedded in the substance of the lobe.

The vesicles of the thyroid do not always present the appearance above described. Sometimes they are irregular, with projections of the wall into their interior, and are lined with pronouncedly columnar epithelium cells. In these circumstances there is usually little or none of the typical colloid material in the vesicles—although the appearance of the epithelium is that of marked secretory activity. It may be inferred that the secreted material finds in these cases a ready exit from the vesicles and thus fails to accumulate within them: it is possible that it may also be different in consistence and quality. So far as can be ascertained these differences of appearance are seen in animals which are otherwise normal. A glandular structure of this type, but even more pronounced, is noticeable in the thyroid in cases of exophthalmic goitre in man. It is usually interpreted as indicative of the production of excess of secretion (hyperthyroidism). The epithelium cells of the vesicles contain fatty granules which, according to Erdheim, increase in number with age: they are most numerous near the free border. The "colloid" is insoluble in alcohol, water, or either: when coagulated it is readily stained by eosin, less easily by haematoxylin. In fixed sections it often appears to be shrunken away from the epithelium. It is believed to be formed from granules which are produced within the cells and which become changed and dissolved on extrusion. Doubtless it contains the active principles of the secretion and probably forms a storehouse whence they can be extracted as required by the organism.

The "colloid" of the thyroid appears always to contain iodine. It is true that cases have been recorded both in man and animals in which a negative result has been obtained on analysis, but according to A. T. Cameron, this is probably due to the employment of methods of detection less sensitive than those now used.

The thyroid is found in all Vertebrata from Amphioxus upwards. It is originally developed in the same way as an ordinary secreting gland by a median outgrowth from the entoderm lining the floor of the pharynx at a level between the first and second branchial arches. It appears very early and grows backwards as a solid column of cells, bifurcating at the upper end of the trachea into two lateral portions. The solid column is hollowed out into a duct *(ductus thyreoglossus)*, which presently becomes obliterated, usually completely; its original opening remains throughout life as the *foramen caecum* at the back of the tongue. The lateral parts into which the caudal end divides branch again and again to form a system of hollow epithelium-lined tubes, and later these become cut up into the closed vesicles which are characteristic of the gland. In mammals they are joined by outgrowths from the ventral wall of the pharynx on each side behind the last branchial cleft (*post-branchial bodies*); these accordingly contribute to the formation of the organ, but to a very different degree in different species of animals.

STRUCTURE AND DEVELOPMENT OF PARATHYROIDS.

The *parathyroids* are four minute organs each averaging 6 mm. in length, and 3 to 4 mm. broad, and weighing 0.03 gramme (half a grain). Sometimes there are more than four, rarely less. As already stated, one or more may occur altogether detached from the thyroid, but usually in man they are closely attached to it: one may even be embedded in its substance. They were described by Sandstrom in 1888. Their physiological independence and distinction from the thyroid proper was recognised by Gley in 1891 and confirmed by Vassali and Generali in 1896, but is not fully accepted by Vincent and a few other authorities.

Each parathyroid is a mass of polygonal epithelium-like cells, arranged in strands or trabeculae with numerous sinus-like capillaries running between or around them. There is a capsule of areolar tissue sending in processes to join the interstitial tissue of the organ: plain muscle cells have been described in this: it may also contain fat-cells. Besides the ordinary cells of the gland—which are stained with difficulty by most dyes—others occur which contain oxyphil granules, staining intensely with eosin (Welsh): these only appear after the tenth year in man. Whether they represent a functional stage of the ordinary cells or not is uncertain. Both kinds of cells contain fatty granules; glycogen has also been detected in them.

Vesicles containing colloid material similar to those of the thyroid but usually smaller are frequently found in the parathyroids. They usually increase in number with age, and occasionally the colloid is found between the cells, not enclosed within a vesicle. Whether it is of the same chemical nature as that of the thyroid is not established. But it is noteworthy that after complete removal of the thyroid with those parathyroids which are embedded in it, the colloid-containing vesicles of the parathyroids which have been left were found by Vincent and Jolly to be increased both in number and size. This observation has been confirmed by Halpenny and Thompson, who have found that if the animal survives a sufficient time these vesicles become large and irregular and present a close resemblance to those of a thyroid in superactivity, as in exophthalmic goitre. The same observers found that after removal of all the parathyroids the thyroid tissue itself may take on a similar appearance, with large and irregular vesicles. In this case there is also seen a multiplication of intervesicular cells, and these appear to be of the same nature as the cells of the parathyroids. The conclusion is that the tissues of the two organs are largely intermixed, at least in birds and mammals, although in lower Vertebrates Mrs. Thompson found the two to be completely separate both developmentally and structurally. Biedl has made a similar observation of the development of colloid-containing vesicles in the parathyroid in a case of atrophy of the thyroid in man.

The nerves of the parathyroids, like those of the thyroids, pass both to the vessels and to the secreting cells. Some evidence has been adducd by Asher and by Edwards which seems to show that the cell-activity is controlled by the nervous system.

The parathyroids are developed from outgrowths of the IIIrd and IVth visceral clefts on either side: from the same clefts the rudiments of the thymus are also derived; occasionally, as already mentioned, one or more outgrowths from the thymus rudiments pass into the thyroid. On the other hand parathyroid and even thyroid tissue occasionally occurs within the thymus: in some animals, e. g. the sheep, constantly.

EFFECTS OF REMOVAL OR DESTRUCTION OF THE THYROPARATHYROID APPARATUS.

Surgical or experimental removal of this apparatus (a) may be complete; or (b) may be confined to the thyroid, with or without those parathyroids which are embedded in its substance, the other two being left; or (c) may involve only the parathyroids, most of the thyroid itself being left. The results vary (1) with the nature and completeness of the operation, (2) with the species of animal, (3) with the age of the animal.

Effects of parathyroidectomy.—If the operation is complete, i. e. if it includes all four parathyroids—most animals die as the result of the removal; some within a few days, others within a few weeks. The most acute symptoms are exhibited by carnivora such as dogs, cats, foxes and wolves (Vincent) and the young of herbivora (v. Eiselsberg, Sutherland Simpson) and are of a nervous nature. For the first day or two there are no symptoms, other than some loss of appetite. There then supervenes marked exaltation of reflexes, which leads to the occurrence from time to time of fibrillar contractions of muscles and later cramp-like and clonic contractions, and eventually convulsive fits; these may be of considerable violence and alternate with intervals of depression. The body temperature may rise two or three degrees (centigrade) during the fit. The paroxysms are usually accompanied by rapid gasping respirations which may be synchronous with the heartbeats; sometimes by vomiting and diarrhoea. Death may occur within a few days or the affection may last a long time and spontaneous recovery may occur. The syndrome is usually spoken of as "tetany" *(tetania parathyreopriva)*; which is in no way synonymous with "tetanus." The fits are sometimes frequent but more often occur at long intervals; the animal, if it fails to recover from the effects of the removal, usually succumbs during a convulsion.

Tetany is without doubt due to the loss of the parathyroids, for it will occur when these alone are removed. It may take an acute or a chronic form and it varies greatly in severity. The symptoms may remain latent for a considerable time and only show themselves as the result of some unusual condition such as pregnancy. The effect is on the motor neurones, for Horsley and Lanz state that it is not influenced by ablation of cerebral cortex; nor, according to Mustard, by section of dorsal roots. After spinal transection it disappears below the level of the lesion, but the hind limbs may show rhythmic movements. In many cases it is relieved by administration of thyroid substance: it is uncertain if this result is due to included parathyroid alone. When tetany is produced by *total extirpation* of all parathyroid tissues it can apparently only be cured by a successful graft of a parathyroid from an animal of the same species. The condition has often been found to occur after complete removal of the thyro-parathyroid apparatus in man and may be sufficiently serious to threaten life, unless suitable measures are taken to combat the effects of parathyroid loss.*

In order to prevent the accession of tetany in operations for removal of thyroid tumours it is usually necessary to leave at least two of the four parathyroids.

---

*A case in which all possible remedies, and grafts from various animals, including a monkey, were tried without avail, but which was rapidly and completely cured by the implantation into the subcutaneous tissue of a parathyroid obtained from the dead-house is described by W. H. Brown in the Annals of Surgery, Vol. LIII, 1911. Others have furnished similar records.

The most satisfactory explanation of the nervous results of the removal of the parathyroids is the assumption that they yield to the blood a special autacoid—presumably of a chalonic or restraining nature—which tends to prevent over-excitation or discharge of nerve-cells. It has been suggested that the over-excitation, since it occurs most markedly in carnivora, is induced by products of protein metabolism. Some species exhibit no symptoms whatever—at least when the operation is performed on the adult. Horsley stated that this is the case with birds and rabbits; but, according to Gley, the latter are affected if care is taken to find and remove all four parathyroids, and Doyon and Jouty obtained typical tetany in hens which had been parathyroidectomized. Vincent and Jolly found that rats and guinea-pigs do not seem to suffer from removal of their parathyroids, but Christiani and Erdheim both describe tetania parathyreopriva in rats: and Pfeiffer and Meyer obtained it in mice. According to Vincent and Jolly badgers are totally unaffected by complete removal of both thyroids and parathyroids.

It is possible that insufficient attention has been paid to age by many who have experimented on the subject. For it is certain that young animals are much more susceptible both to thyroidectomy and to parathyroidectomy than adults. This is strikingly exemplified in recent experiments by v. Eiselsberg and by Sutherland Simpson on sheep and lambs: the sheep showing no symptoms whatever, while the lambs exhibited both symptoms of tetany and arrest of development with supervention of cretinism. Adult goats on the other hand exhibit well marked tetania parathyreopriva. In monkeys this condition has most generally been missed, but it sometimes occurs.

Effects on metabolism.—An observation which has frequently been made after parathyroidectomy is the occurrence of changes in the growth and structure of the bones and teeth. Naturally these changes are only seen if the animals survive the operation for some time. In the teeth the calcification—especially of the dentine—appears to be delayed (young rats) and in the skeleton the bones generally remain smaller than in the controls: the healing of fractures is also said to be delayed. If these changes are the direct result of the removal of the parathyroids there is thus some reason for believing that these glands produce a second autacoid which is able to influence calcium metabolism, and a further foundation for this is met with in the fact that more than one observer has described an increase of calcium excretion in parathyroidectomized animals. In connexion with this subject but pointing in the opposite direction it is noteworthy that many cases of osteomalacia have been found to be associated with hyperplasia (adenoma) of one or more parathyroids and therefore presumably with a condition of hyperparathyroidism.

MacCallum and Voegtlin found that the effects of parathyroidectomy could be removed by injection of extract of parathyroid. The extract has also been used with some success in man by Halsted. Extract of pituitary is said by Ott to have a similar effect. The same result was obtained by MacCallum from the administration of calcium salts, both subcutaneously and by the mouth. According to Biedl, however, these salts do not prolong life after the operation; and in my experience they may altogether fail either to prevent or alleviate post-operative tetany. According to Carlson and Jacobson, the action of calcium salts, when it occurs, is like that of other substances which decrease the excitability of the nervous system. No other substance appears to exhibit the specific action on the nervous system of the parathyroid autacoid.

Hyper-parathyroidism.—According to Ott extracts of parathyroid when injected intravenously have an entirely different effect from those of thyroid. He states that the blood-pressure is first raised, then lowered; that they increase the rate of respiration; that they are diuretic, acting directly on the renal epithelium, and that in large doses they have the effect of lowering the body temperature. Also that applied locally the extracts increase the extent of the contraction both of intestines and uterus, and dilate the pupil.

Clinical evidence. Various clinical symptoms have been ascribed to pathological changes in the parathyroids, which have been supposed to lead (1) in the direction of atrophy or diminished secretion (*hypo-parathyroidism*) or (2) in the direction of enlargement or increased activity (*hyper-parathyroidism*), or (3) in that of altered secretion (*dys-parathyroidism*). To the first condition have been ascribed manifestations resembling those of tetania parathyreopriva. These occur under various circumstances, e. g. during pregnancy, in the course of infectious diseases, and in *tetania neonatorum*. In some of these cases degenerative changes or haemorrhages have been described in the parathyroids. But other cases have been recorded in which changes of a similar character have been found post mortem in the parathyroids without symptoms of tetany having been noticed during life. Attempts have also been made to associate conditions showing increase of response to reflex or to cortical stimuli, e. g. such as occur in *Thomsen's disease* or in *paralysis agitans*, with a condition of chronic deficiency of parathyroid secretion. And on the other hand it has been suggested that pseudoparalytic conditions, such as those which are found in *myotonia paralytica* and *myasthenia gravis*, are due to chronic increase of the secretion. But the evidence in support of these views of the origin of such affections is by no means convincing.

The theory that the parathyroids serve the purpose of destroying poisonous products of metabolism which are elaborated in the main thyroid—apart from its *a priori* improbability—has received no support from the results of experiment. If the removal of the parathyroids were to be explained in this manner, simple parathyroidectomy should produce much more acute symptoms than total removal of the whole thyroid and parathyroid apparatus, but Biedl states that there is no difference in the acuteness of the symptoms. It is however possible that, as already stated, the symptoms of tetany may be produced by the accumulation in the blood of toxic intermediate products of protein metabolism, such as appear when the metabolic functions of the liver are interfered with. If this is so it might be inferred that the parathyroids produce an autacoid of hormonic nature which excites some other organ or organs (e. g. the liver) to complete the metabolism of proteins. But the simplest theory to explain the phenomenon observed is that already suggested, which assumes the production of a chalonic autacoid serving to diminish the excitability of nerve-cells. This hypothetical autacoid—which it must be well understood has never been isolated—may provisionally be termed *parathyrine.* We shall see that there is reason to believe that the main thyroid produces an autacoid with an opposite tendency.

The Effects of Removal and of Atrophy of Degeneration of Thyroid (Two or More of the Parathyroids Being Left).

Considerable variations are found with animals of different species and even with individuals of the same species. As with parathyroidectomy, thyroidectomy produces the most marked results in young animals. Similar results are obtained in cases of spontaneous atrophy of the gland, or when such a change in structure as interferes with its functions occurs in young children. There is arrest of growth, especially of the skeleton, the cartilage-bones long remaining incompletely ossified; development of the generative organs is much delayed; the integument is swollen, the surface of the skin dry; the hair thin; the face pale and puffy; the abdomen swollen; the nose depressed; the hands and feet are podgy. The fontanelles of the skull remain open. The muscles are limp and weak. Deaf-mutism is common. The highest functions of the nervous system remain undeveloped: this is due to an arrested development of cells of the cortex cerebri.

The above combination of symptoms forms the condition known as *cretinism.* This may be either sporadic or endemic; the former generally associated with absence of early atrophy of the thyroid; the latter with goitrous degeneration: but the differential diagnosis is not always easy as most of the symptoms are similar. Of endemic cretinism, according to McCarrison, there are in the Himalayan valleys two types, the myxoedematous and the nervous: the latter is presumably associated with atrophy of parathyroids; whilst in the former the parathyroids are unaltered. This is the type chiefly met with in Europe. These symptoms do not, however, show themselves until some little while after birth, in spite of the absence of a thyroid. The absence appears to be sufficiently compensated for, for a time at any rate, by autacoids conveyed from the mother's thyroid to the child; before birth through the placenta, after birth through the milk. If the atrophy is congenital—in which case it usually takes the form of complete lack of development of the thyroid proper, the parathyroids being generally present and well developed—the condition of cretinsim and all the above symptoms are well marked.

If either thyroid atrophy is present or in the adult subject such degenerative changes take place in the gland as materially affect its functions, the condition known as *myxoedema* (or *Myxoedema adultorum* to distinguish it from the corresponding affection of the child) becomes manifested. This condition, which is much more common in females than in males, was described by Gull in 1873, and recognized by him to be a cretinoid condition of adult life; while, in 1877, Ord, who gave to the affection the name myxoedema—which was however based on a misapprehension—showed that it is associated with changes in the thyroid. It is characterized by thickening and swelling of the integument, which pits on pressure, the pitting disappearing on relaxing the pressure: by the skin becoming dry and the hairs falling out: by a low body temperature, and by mental dullness and general impairment of sensibility.* Both in spontaneous and in operative myxoedema the metabolic processes are diminished in activity so that although less food is taken the body weight may increase. Regenerative changes also occur more slowly. There is usually a considerable deposition of fat, especially under the skin. The activity of the sexual functions is diminished in both sexes. There is a diminution in the amount of oxygen consumed and in the amount of nitrogen excreted. There is increased tolerance for sugar and a considerably larger amount than usual (as much as 300 g.) may be taken without producing glycosuria. Nevertheless glycosuria occurs sometimes, but is not excessive.

---

*Brun and Mott found in three cases of myxœdema in the human subject, general chromatolysis of nerve-cells of subacute character: they regard these changes as secondary to the thyroid affection.

Symptoms similar to those of myxoedema are produced as the result of surgical removal of the thyroid in man. This was first apparent as the result of the effects of operation for goitrous tumours (J. and A. Reverdin, Th. Kocher). The Reverdins indeed spoke of the condition as one of *post-operative myxoedema,* whilst Kocher termed it *cachexia strumipriva.* It begins to show itself at a variable period after operation—from a few days to months or even years—and is more readily produced in young than in older subjects. It is sometimes accompanied by symptoms of tetany: when present, these symptoms are presumably referable to involvement of parathyroids. According to Kocher, the patients rarely survive the complete loss of the thyroid for more than seven years. To prevent serious ill effects at least one-fourth of the organ must be left.

The above symptoms, whether due to congenital atrophy or to operative removal, can be allayed or entirely removed by successful implantation of pieces of thyroid (Schiff) an operation which has however rarely succeeded in man* or by administration of thyroid substance or extract either hypodermically (Murray) or by the mouth (Mackenzie and Fox). Patients suffering from the effects of loss of thyroid secretion, whether this take the form of cretinism, myxoedema or cachexia strumipriva, can be completely restored to health and kept normal for apparently any length of time by buccal administration of the gland or its extracts. If the treatment be intermitted the symptoms almost at once begin to reappear. The effects are therefore obviously due to the loss of the autacoid contained in the internal secretion. This autacoid actively influences the metabolic processes of the body, either directly or indirectly promoting the nutrition of certain tissues, especially the connective tissues and the tissues of the nervous system.

EFFECTS OF DIMINUTION OF THYROID SECRETIONS: HYPERTHYROIDISM.

Enlargement of the thyroid such as occurs in endemic goitre, in spite of a great increase in volume of the gland, is commonly not attended by symptoms of hyperthyroidism, but the reverse. Sometimes such enlargement is the result of malignant cell-proliferation (carcinoma or sarcoma); in this case the functions of the organ are as a rule still carried on.* The enlargement of the gland in endemic goitre generally takes the form of a diffuse hypertrophy: the follicles enlarge and their epithelium proliferates: new follicles also become formed. There is nearly always a tendency for the colloid to accumulate. This ultimately causes distension of the vesicles and flattening of their epithelium, which may eventually undergo almost complete degeneration. A characteristic degeneration of the arteries of the gland has also been described.

---

*Kocher has, however, lately published 93 cases of attempted transplantation, 23 of which were cured as the result of the operation and 18 showed improvement, although thyroid feeding had to be continued to some extent.

Whilst the above are the usual changes found in endemic goitre, many exceptions are met with. One would expect from the above description that the enlarged gland was yielding an excessive amount of secretion, and as a matter of fact, endemic goitre is occasionally characterized in its early stages by symptoms suggestive of hypersecretion and resembling some of those seen in incipient exophthalmic goitre. More often these symptoms of hyperthyroidism are absent: generally from the first, and always eventually, the appearances which show themselves are unquestionably symptomatic of hypothyroidism. This must mean that even if the secretion is being produced in abundance it is not of a normal character, the normal autacoid being either absent or deficient in quantity. Possibly the enlargement of the gland represents an attempt by nature to compensate for such deficiency.

Effects of Increase of Thyroid Secretions: Hyperthyroidism.

The effects of a too great amount of the thyroid autacoids in the circulating blood can be investigated either by their introduction directly into the circulation or indirectly by other channels such as the alimentary canal; or by studying the symptoms of those affections in which there is reason for believing that an excess of these autacoids is being secreted by the gland.

The immediate results of intravenous injection are relatively slight. The most common effect is to produce a marked but evanescent fall of blood-pressure, which is mainly due to dilatation of the peripheral vessels, complicated in some animals (cat) by an excitation of the vagus centre and consequent slowing of the heart. Whether these particular effects are specific is uncertain; at any rate somewhat similar results are obtained from many other organ extracts. According to

---

*It is a significant fact in connexion with the genesis of malignant tumours that when in such cases the whole of the gland is removed by the surgeon, should there be any metastatic growths elsewhere, e. g. in the liver, the usual symptoms of cachexia thyreopriva do not show themselves (v. Eiselsberg).

Lohmann and others the depressor substance in thyroid extract is cholin. Asher states that the fall of blood-pressure and effects on the heart are not seen in the rabbit, but other results are produced, for immediately after such injection in that animal the excitability of the vagus and of the depressor nerve is increased, and the changes in blood-pressure, pupil, etc., produced by a particular dose of adrenine are enhanced. Given by the mouth in the human subject thyroid extract produces lowering of the blood-pressure.* Large doses are followed by tachycardia (rapid pulse), often with some irregularity; nervous excitability; flushing of the skin, with feeling of heat; increase of perspiration; and increase of nitrogen metabolism. If long continued the fat of the body is diminished and glycosuria may be caused. Alimentary glycosuria is also more easily produced than normally. In extreme cases there may be exophthalmos and other effects referable to cervical sympathetic excitation, such as dilatation of the pupil and (in animals) retraction of the third eyelid; psychical excitement; sleeplessness; tremors of the limbs; in short, most of the symptoms of exophthalmic goitre. The addition to the food of animals of even a small amount of thyroid gland has the effect of increasing nitrogenous metabolism, as shown by the increase of nitrogen in the urine. This is accompanied by a corresponding increase in food consumption. Some of the additional nitrogen thus ingested is retained in the body but this is compensated for by increased fat consumption, so that the difference in growth curve of the thyroid-fed animals and the controls is but slight. With large doses of thyroid there soon ensues marked loss of weight due to increased nitrogenous excretion and loss of fat.

The colloid contents of the thyroid vesicles are greatly increased during the ingestion of much thyroid substance.

Exophthalmic goitre.—This affection, first described by Parry (1825) and associated by him with the thyroid, is also associated with the names of Graves (1835) and Basedow (1840), both of whom called special attention to the symptoms. The name *exophthalmic goitre* expresses its most prominent sign. The disease is associated with enlargement of the thyroid. According to Moebius and Greenfield the enlargement is accompanied by hypersecretion which is the direct cause of the symptoms, this opinion being founded on the fact that (1) as has just been mentioned, some of the symptoms of the disease can be produced by excessive administration of thyroid, and (2) that the symptoms are for the most part opposite in character to those which are known to be produced by atrophy or diminution of function of the gland. Thus there is a rapid and often irregular pulse; nervous and psychical excitation, with muscular tremors; a feeling of warmth in the skin, and throbbing of cutaneous vessels, often accompanied by profuse sweating; shallow respiration; markedly increased metabolism (especially nitrogenous) with abnormal appetite and loss of body fat; a decreased assimilatory power for carbohydrates; an anxious restless expression; prominence of the eyeballs;* wide palpebral aperture, often with dilatation of pupils. The enlargement of the thyroid may involve only one lobe. The enlarged gland pulsates, and gives a murmur on auscultation.

---

*In diabetic subjects it is said to cause the opposite result—an effect lasting for several days.

Exophthalmic goitre is far more common in the female than in the male (as 4.6 to 1), a fact which may be related to the enlargement of the gland, which usually occurs in the female at puberty and during pregnancy. It is generally associated with a persistent thymus, an internal secretion from which has by some authors been credited with the production of certain of the symptoms of the disease. About 13.5% have polyuria without sugar. Only 2% have glycosuria, although alimentary glycosuria is not uncommon. Albuminuria is present in about 11%.

The histological appearances are conformable with the theory of a hypersecretion (which may however be abnormal). The gland is greatly enlarged, and the individual vesicles are larger than usual and tend to run together. The interstitial tissue is increased in amount and assumes a lymphoid appearance, often with characteristic germinal centres. The follicle wall tends to grow into the interior of the enlarged and conjoined follicles in the form of ridges and papillae, thus increasing the surface for secretion and giving the cavities an irregular aspect. On the other hand, some follicles undergo retrograde changes, and may even disappear. The cells lining the follicles acquire a columnar form: in later stages they may undergo degeneration and become set free within the follicles. The contents of the follicles are more fluid than in the normal thyroid and stain less.

Direct proof of hypersecretion is thought to be furnished by the experiments of Reid Hunt, who found that the blood of a person afflicted with exophthalmic goitre increases the resistance of mice to the poisonous effects of acetonitrile; a reaction he had previously found to take place after injection of thyroid extract. Asher and Flack have also obtained physiological evidence of the existence of excess of thyroid secretion in the blood in this disease. Others, on the contrary, have found that injection into animals of serum from a patient in whom the disease is active does not produce the same effects as thyroid juice; and although in dogs small doses of extract from an exophthalmic goitre cause increased rate of heart-beat and some rise of blood-pressure, this is soon followed by the opposite condition. Moreover the action of the sympathetic is sometimes lessened and that of the vagus may be reversed. The symptoms are therefore produced, according to Gley and Sahli, not by excess of normal thyroid secretion circulating in the blood, but probably as the result of the production of a perverted secretion (dysthyroidism).

---

*It is stated that the exophthalmos may be unilateral, in which case it can hardly be produced entirely by the circulation of an autacoid in the blood without the intervention of a nervous factor.

THE NATURE AND MODE OF ACTION OF THE AUTACOID SUBSTANCE CONTAINED IN THE INTERNAL SECRETION OF THE THYROID.

The active principle of the thyroid has been usually assumed to be represented by the non-proteid nitrogenous material known as iodothyrin or the compound proteid iodo-thyro-globulin. The former was prepared from thyroid by Baumann (1895) and found by him to contain a marked amount of iodine (.3 to .9 per mille of dry substance). In confirmation of this view the experiments of Reid Hunt and others seemed to show that the production of the autacoid is promoted by administration of iodides and that there is a certain relation between the physiological activity of the gland and its iodine content. But the fact that even when the dessicated thyroid contains a considerable amount of iodine it is sometimes found to have no action suggests that Baumann's substance is not the actual autacoid, although it may be associated with it. We are in fact still in the dark so far as the true nature of this autacoid is concerned and it seems better to express our ignorance by a term which implies no theory, leaving the question of its identity with iodo-thyrin or iodo-thyro-globulin open. I propose therefore provisionally to apply the word *thyrine* to denote the active principle, whether it be identical with or contained in the iodo-thyrin of Baumann or not.

As we have already seen, the autacoid of the parathyroid (parathyrine) is probably of chalonic, i. e. of inhibitory nature, serving to keep in check the activity of nerve-cells. On the other hand, the autacoid of the thyroid (thyrine) acts like a hormone in increasing the excitability of nerve-cells. This increase of excitability is especially well marked in connexion with the sympathetic. Here the question arises: Is this a direct effect on the sympathetic system or is it indirect through the adrenals? which are stimulated to increased secretory activity by excess of thyroid in the blood. The answer is not easy. But it may be stated that although certain symptoms of hyperthyroidism are similar to those produced by excess of adrenine in the blood, others are not so. This is the case with the flushing of the skin, which is due to vascular dilatation; whereas adrenine ordinarily produces vasoconstriction. Further, excess of adrenine in the blood leads to glycosuria, which is not as a rule seen in exophthalmic goitre. Moreover it is undoubtedly the case that the administration of adrenine exercises a markedly beneficial effect in some cases of exophthalmic goitre: a fact which would be inexplicable on the theory that the results of hyperthyroidism are simply due to excitation of the suprarenals and the production of an excess of adrenine.

But although many of the effects of thyroid feeding and of hyperthyroidism otherwise produced can be explained by the presence of excitatory or hormonic autacoids, it is not possible to explain the results produced by thyroid deprivation, or hypothyroidism, upon the body generally and certain organs in particular merely by assuming the absence of these excitatory substances. For loss of the thyroid is followed by increased growth and presumably activity in certain organs. This is notably the case with the pituitary; and although it has been suggested that this a case of vicarious increase of size associated with the performance of similar functions, the similarity of the functions of the two glands is far from obvious. A more probable explanation is that besides a hormone which excites nerve-cells, the thyroid secretes an autacoid of chalonic nature which restrains the activity of certain other organs, such as the pituitary: on removal of the thyroid this restraint is abolished, and over-activity is the result.

The thyroid autacoids also affect the growth of the thymus gland, which has been found to undergo an increase in size in foetal animals after thyroid feeding of the pregnant mother (guineapigs): on the other hand the suprarenal capsules and the thyroid itself have been found to undergo a diminution in weight under these circumstances. Hoskins, who furnishes this observation, ascribes the effect upon the growth of the thymus to stimulation by a hormone furnished by the thyroid: if this is so, the opposite results on suprarenal and thyroid should be ascribed to an autacoid of opposite sign. In conformity with this idea the diminished growth of the skeleton and of the generative organs which follow thyroid removal in young animals should be put down to the absence of a hormone, which promotes their development.

A close relationship exists between the size and structure of the thyroid and the state of general nutrition of the animal. The effect of variations of diet upon the thyroid has been studied in rats by Chalmers Watson, who has shown that all transitions from an active or superactive organ with highly developed columnar epithelium and irregular large vesicles and without any great accumulation of colloid, to a gland with flattened epithelium and large spheroidal vesicles distended by deeply staining "colloid" are exhibited under the influence of different nutritive substances in the diet: the former conditions being, in the rat, typically seen when the animals have been fed upon a mixed food such as bread and milk: the latter when the diet has been composed of lean meat. Prolonged feeding of rats with lean meat led eventually to a shrinking in size of the vesicles and of the whole organ, these changes being associated with dryness of skin, falling off of hair, and other evidences of ill health; but in carnivora results of this kind were not observed.

INTERACTION OF THE THYROID WITH OTHER ORGANS.

The generative organs.—The important influence exerted by the thyroid secretion on nutrition generally is no doubt responsible for the fact that hardly any organ in the body remains unaffected as a result of its complete removal or atrophy. But the secreting organs with which it may be regarded as being more specifically associated are few. Among them are the generative glands. In the female the thyroid becomes enlarged at puberty, during the menses, and during pregnancy. In the young thyroidectomized subject the generative glands are only slowly or imperfectly developed, the resulting condition being characteristically one of sexual infantilism. In the adult animal (dog) Alquier and Theuveny found diminished activity so far as production of spermatozoa is concerned, but less distinct evidence of change in the ovary; although the animals appeared to come on less completely in heat and to conceive with difficulty.

The liver and pancreas.—Other effects, of a more or less specific character, are produced upon liver-glycogen. Krause and Cramer find that in the cat and rat, fed with thyroid, glycogen disappears from the liver; but there is no glycosuria, the sugar having been conveyed to the tissues and oxydised. Parhon has obtained a similar result with the rabbit. The thyroid therefore produces mobilisation of .carbohydrates. Thyroid feeding also tends, as we have seen, to diminish the limit for the assimilation of sugar—this may be due to an increase in the secretion of adrenine, or perhaps to a direct inhibitory effect on the internal secretion of the pancreas.

After thyroidectomy the assimilation limit for sugar is markedly raised: and according to Eppinger, Falta and Rüdinger, adrenine-glycosuria is greatly diminished or fails to show itself. This statement has, however, been denied by Underhill and Hilditch. If the parathyroids be included in the removal the assimilation limit for sugar is lowered and adrenine produces a stronger glycosuria than in the normal animal. The influence of the thyroids and parathyroids is therefore antagonistic in this as in some other respects. According to Lorand, if a dog deprived of pancreas and exhibiting glycosuria be thyroidectomized the sugar disappears from the urine. Lorand further states that extirpation of the pancreas has the effect of increasing the amount of colloid in the thyroid vesicles and that thyroidectomy causes a marked increase in the amount of islet tissue in the pancreas. But both these statements are difficult to accept on account of the differences which are normally present, both in amount of colloid in the thyroid and in number of islets in the pancreas. If substantiated they would show a direct correlation between the thyroid and the pancreas, the internal secretion of the thyroid being restrained by that of the pancreas and the internal secretion of the pancreas by that of the thyroid, so that when either gland is extirpated, the internal secretion of the other either becomes more active or is increased in amount.

The adrenals.—There is, however, an indirect way in which the internal secretion of the pancreas can be influenced by thyroid secretion, and that is by the effect which the secretion produces upon the activity of the secretion of the suprarenal capsules. This effect is, as Asher and Flack have shown, in the direction of increase of excitability of those tissues, which are amenable to the action of adrenine. And when the thyroid is extirpated the activity of the secretion of the suprarenals is diminished. Not only is this the case with the effects of adrenine, but the phenomena generally which are normally produced by sympathetic stimulation are similarly affected. Further, with hyperthyrosis such as occurs in intense thyroid feeding and exophthalmic goitre most but not all of the symptoms are, as we have seen, those of over-excitation of the sympathetic and are similar to those caused by adrenine. Moreover, there is some evidence that the amount of adrenine in the blood is increased in hyperthyroidism as well as that its activity is enhanced.

Ott and Scott got increase of adrenine in the blood after intravenous injection of thyroid extract. They obtained, however, a similar result after injection of other organ extracts. Kraus and his fellow workers observed dilatation of the pupil of the excised frog's eye when placed in blood-serum or blood-plasma of patients affected by exophthalmic goitre, although blood-plasma of normal individuals does not give this reaction. But the fact that some cases of exophthalmic goitre benefit by the exhibition of adrenine is difficult of explanation, since from what has been stated this should cause an exacerbation of the symptoms. Moreover, it must be borne in mind that some of the physiological tests which have been used for adrenine would also be given by pituitrine, and this may be a factor in the discussion of the question. Kraus has also obtained chemical evidence of the presence of excess of adrenine in blood after injection into animals of the juice of thyroid gland from cases of exophthalmic goitre, and in such cases its presence has also been demonstrated by physiological tests (Fraenkel with the uterus; Trendelenburg and Bröking, with the frog's bloodvessels). It may therefore be assumed that the secretion of the thyroid in exophthalmic goitre acts as a direct stimulant to the suprarenal capsules, causing them to yield adrenine to the blood in larger quantity.

The pituitary body.—As has been pointed out above, a very striking effect is caused by removal or atrophy of the thyroid upon the pituitary body: which not only undergoes general enlargement but also exhibits well marked indications of increased secretion. These changes will be described when the pituitary is dealt with.

The thymus gland.—Reference has already been made to the anatomical and developmental relationship between thymus and thyroid, to the effect of thyroid feeding of a pregnant animal upon the growth of the thymus of the foetus, and to the supposed effect of the thymus in assisting to produce the symptoms of exophthalmic goitre: indeed its removal by operation has been recommended and even practised in that affection. In view of these circumstances some believe that there exists a mutual relationship between the two organs, and that they exercise—by their internal secretions—some sort of excitatory influence upon one another. In conformity with this it has been pointed out that the increase or diminution in size of the two organs usually go hand in hand. But this can only be early in life, for under normal conditions of growth and development the thymus is undergoing retrogression whilst the thyroid is becoming more active in its functions. Moreover, the variations in the thymus are so considerable, and at present in spite of many observations so little is accurately known regarding the conditions under which they occur that it will be wise to reserve judgment as to the mutual relations of this organ and the thyroid.

Influence of the Nervous System on Thyroid Secretion.

It was shown by Cyon that vasodilator nerve fibres pass from the recurrent laryngeal nerves to the thyroid gland. Ossokin finds the gland to be supplied by both laryngeal nerves and also by the pharyngeal branches of the vagus. Vasoconstrictors pass to it by way of the sympathetic. H. Wiener found extirpation of the inferior cervical ganglion to be followed by atrophy of the gland and diminution of thyro-globulin in the thyroid of the same side. It has further been shown by Asher and his fellow workers that the internal secretion of the thyroid is directly influenced by the nerve fibres which pass to the gland by the superior and inferior laryngeal nerves. In order to test the amount of its autacoid in the blood they took advantage of the fact that injection of thyroid juice or extract into the circulating blood (1) increases the excitability of the vasoinhibitory fibres of the depressor nerve—or at least increases the effect produced by their excitation; (2) increases the effect of stimulating the splanchnics; (3) increases the effect of stimulating the cardiac vagus; (4) increases the effect produced by injection of a given dose of adrenine. They obtained these results during stimulation of the peripheral cut ends of the laryngeal nerves, but failed to get them if they had previously extirpated the thyroid. It has also been stated that the iodine content of a thyroid lobe is diminished as the result of excitation of the vagus of the same side.

These observations indicate that in the secretion and outpouring of its active principles the thyroid is, like externally secreting glands, under the direct influence of nerves. This fact serves to corroborate the conclusion arrived at from other considerations, that in this gland as in the parathyroids we have to deal with an organ of internal secretion. The view which was at one time held that its function is merely that of a destroyer of toxic substances circulating in the blood is no longer tenable. The same may be said for an old idea—renovated by Cyon—that the gland serves as a kind of shunt to regulate the flow of blood in the cranial cavity. This, indeed, has nothing to support it beyond the extreme vascularity of the gland and its position in close connexion with the carotids.

LECTURE III.

THE FUNCTIONS OF THE ADRENAL APPARATUS.

The suprarenal capsules or adrenals have received special attention, both from clinicians and physiologists, since Addison (1855) described the symptoms of the disease which bears his name and which he associated with degeneration of these organs. Addison's disease is characterized by great languor and general debility, with weakness and diminution of tone, not only of the skeletal but of the vascular and visceral musculature, feeble action of heart, loss of appetite, disturbance of the digestive tract, severe abdominal pain and extreme emaciation. Anaemia, which is an occasional accompanyment of the disease, was regarded by Addison, when it occurs, as symptomatic; but it is probably the result not of the destruction of the capsules but of the intercurrent affection (generally tuberculosis), which has produced their destruction. The most striking characteristic of the disease as described by Addison was undoubtedly the pigmentation (bronzing) of the skin, which occurs as a diffuse colouration upon the face and hands and other exposed parts and is increased in regions where there is some pigmentation normally present, such as the areolae of the nipples and the external genital organ. It is also found on the mucous membrane of the mouth and on that of the conjunctiva. Sometimes the bronzing does not occur; these cases are usually the more acute. The disease is fatal. Its course may be prolonged, "even to six or ten years. In rare instances recovery has taken place, and periods of improvement lasting many months may occur" (Osler). Some cases are markedly benefited by administration of suprarenal extract *per os* or hypodermically; others not at all.

The cause of the excessive formation of pigment is not understood, but it has been suggested (by Adami and others) that adrenine may be derived from the same source as the melanin of the skin and that if the formation of adrenine is interfered with an excess of melanin is formed and deposited. Meirowsky states that in portions of skin removed from patients who have died of Addison's disease an increase of pigment occurs as long as five days after death if the pieces are kept in a warm, moist chamber, but that this does not occur in the skin from those who have died from other causes. He suggests that a colorless precursor of the melanin is present in the skin, and supposes this to become transformed under the influence of light. Somewhat similar observations have been made by Königstein and by Biedl and Hofstätter, on the skin of dogs deprived of their suprarenal apparatus: but negative results were obtained with rabbits and other rodents. In epinephrectomized animals pigmentation of the skin is not seen: it therefore probably requires a gradual destruction such as occurs in chronic disease of the capsules in man, a condition which has not hitherto been successfully imitated in animals. Some observers have, however, described pigmentation of the skin and mucous membranes in animals as the result of removal of the adrenals, or as the result of removal of one and injury of the other. But the evidence of the production of pigmentation by the operation is inconclusive.

Structure of the suprarenal capsules.—It is well known that the adrenals consist of two parts, which although anatomically united in many animals, are morphologically distinct and are developed from different embryonic formations; the first, known as the cortex, being formed from mesoderm-cells of the genital ridge, whilst the second or medulla is developed from cells which belong to the same neuroblast-masses as give rise to the nerve-cells of the sympathetic ganglia. In fishes for the most part these parts remain separate, forming the so-called *inter-renal body* or *bodies,* representing the cortex of the mammal, and the *paired chromaffine bodies,* representing the medulla. But in all higher vertebrates the two parts are united into one organ which is generally closely attached to the kidney on each side. In birds and reptiles the renal and adrenal tissues interlock; it is only in mammals that the same condition is found as in man, viz., a central medulla with an enclosed cortex.

Accessory suprarenals are not infrequent. They consist either of cortical substance alone, or of medullary substance alone, or of the two combined. They occur most commonly between the kidneys and along the lower part of the abdominal aorta as far as its bifurcation. In the male rat such an accessory gland is almost constantly seen close to the epididymis. They are relatively longer and more frequent in the new-born animal than in the adult, in which they may be missed altogether. The possibility of their presence must, however, be borne in mind when considering the results of the extirpation of the adrenals in animals.

SHIELDING OF THE CORTICAL OR INTERRENAL PART OF THE ADRENAL.

The *cortex* of the adrenal is composed of epithelium-like polygonal cells arranged mainly in columns *(zona fasciculata),* but near the medulla as a network of trabeculae (*zona recticularis*). Towards the surface the cell columns end in rounded and sometimes hollowed out terminations forming the so-called *zona glomerulosa,* the cells of which sometimes have a columnar form. The cells are usually rather larger in the *zona fasciculata* than in the other parts. Characteristic of the cortical cells is the presence of lipoid granules, which may give a yellowish colour to this part of the capsule. The *zona recticularis* contains also pigment granules which in some animals give it a distinct brownish colour. The human foetus is well known to have unusually large suprarenal capsules. It has been shown by Elliott and Armour that the increased size is almost entirely due to a great development of a innermost part of the cortex lying at the boundary with the medulla (*boundary zone* of cortex).*

Its cells differ from those of the rest of the cortex in having no lipoid granules. After birth they undergo a fatty change and the layer gradually disappears, so that it is no longer distinguishable after the first year. At birth what will be the cortex of the adult gland consists only of a thin peripheral layer of cells containing lipoids; these cells multiply and the layer enlarges *pari passu* with the disappearance of the boundary zone. A remarkable fact pointed out by Elliott and Armour is that in the anencephalous foetus the boundary zone is absent and the suprarenal resembles that of other foetal mammals.

Functions of the Cortical Part.

Little is known regarding the functions of the cortex. Its anatomical relation in mammals to the chromaffine part and the fact that its blood passes directly into the medulla suggests that its cells may be concerned in the production of materials which are utilized by the medulla, but as has been above mentioned, this relation fails in many vertebrates. It has been stated by Abelous and others that the cortex contains a precursor of the adrenine of the medulla and that if left standing for twenty-four hours in an incubator a considerable amount of a substance giving the reactions of adrenine accumulates within it. But according to the investigations of Bayer the results obtained are not ascribable to adrenine, but to the products of protein decomposition. The statement that the cortex becomes enlarged during pregnancy and is small in cases of deficient sexual development seems to give evidence of some relationship between it and the generative glands; but whether this is direct, or operates through other ductless glands—such as the thyroid and pituitary—is not known. The close connection between the development of the sexual organs and that of the suprarenal cortex has been especially insisted upon by Glynn.

It has also been suggested that a function of the cortex may be to neutralize deleterious products which are formed in the process of metabolism of other organs or are introduced from outside. But this supposition has received no support as the result of experiments.

---

*Not to be confounded with the "intermediate zone" of Virchow, which is a very thin layer, pigmented in old age, lying at the junction of the cortex and medulla.

One of the most striking facts connected with the cells of the cortex is their richness in lipoids and fats, which have been chemically investigated by many workers. Biedl (Innere Sekretion, Vol. II, p. 60, of 2d Edition) gives the following figures from his own investigations. The suprarenals of the pig yielded 74.61 per cent of water and 25.39 per cent of dry residue. Of the latter, 61.12 per cent consisted of proteins, etc., and 38.88 per cent of lipoid—besides some insufficiently distinguishable extractices. In this analysis the medulla was included, and as this is poor in lipoids the lipoid contents of the cortex must have a much higher value: far higher than any other non-nervous tissue.

Their microscopic appearances have been described by Elliott and Tuckett, who found, as others had before them, that besides granules of what appear to be fat, a doubly refracting substance is found in the cortical cells of most animals—varying in amount and in its position in the cortex in different species. In some it takes the form of doubly refracting crystals. Elliott and Tuckett regard both the fatty and the anisotropous substance as products of secretion of the cells. They find that the doubly refracting substance increases in amount during rest and diminishes as the result of muscular activity. But they state that in some animals, e. g. the sheep, both substances may be absent. In the guineapig there are numerous brown colored granules in the cells—chiefly in the *zona reticularis*—and Elliott and Tuckett state that these also accumulate during rest and quickly disappear with muscular work, fatty globules taking their place. The doubly refracting lipoid substances seem to consist mainly of lecithin and cholesterin—the latter in the form of esters. According to Orgler, they consist mainly of protagon. Rosenheim and Tebb, on the other hand, extracted from the suprarenal cortex of the ox various fatty acids, cholesterin esters and phosphatides, such as sphingomyelin, but not free cholesterin. It is probably of cholesterin esters that the doubly refracting material is mainly composed (Aschoff).

The suggestion that the suprarenal cortex may be the chief seat of manufacture of the lipoids of the body and may especially be related to the formation and development of the myelin of the medullated nerve fibres seems an obvious one. And the fact that in the human foetus and infant so large a development of suprarenal cortex occurs—which is missed in the anencephalous monster—seems to indicate a connexion between the development of the substances formed in the cortex and those constituting the cerebral hemispheres. But against this idea we have the further statement of Elliott and Armour that in the foetus the superadded part of the suprarenal cortex does not contain the doubly refracting lipoid substances which are characteristic in most animals of the ordinary cortical cells—although they speak of the cells of the foetal cortex as undergoing a fatty change after birth. Nor does the doubly refracting lipoid matter occur in all animals: in many species it is absent altogether. This is the case with all adult ruminants examined, although it may occur in them in the young state. Thus while absent in the ox or cow it is said to be present in small amount in the calf. In both man and animals where normally present it tends to disappear under various abnormal (disease) conditions: whilst during pregnancy lipoids are said to increase in amount, not only in the suprarenals but in all other organs of the body.

The cortex increases in proportion to the growth of the body more than the medulla. It varies in size with the condition of activity of the sexual glands in animals; nevertheless, castration is followed by hypertrophy of the cortex. But there is no evidence that any kind of active autacoid substance is produced by the cortical cells, and it is probable that their function is associated with the building up of metabolic products which are to find employment in other parts of the organism.

Structure of the Medulla or Chromaffine Part of the Adrenals.

The *medulla* is composed of cells which have a different form and structural appearance from those of the cortex. They are arranged in what in section appear like anastomosing columns with spaces between, but in point of fact the medulla is better described as a solid cell-mass permeated by sinus-like capillary and venous spaces. In this respect it is not unlike liver tissue. Many of the cells are compactly arranged around vascular spaces. They are irregularly polygonal in form, but where they abut on the sinusoid spaces they often assume a more columnar aspect. There can be little doubt that the materials they secrete find their way directly into the blood within these spaces. The cell protoplasm contains granules which vary in amount in different cells. Some of these granules are stained brown with chromic acid and its salts (*adrenine* or *chromaffine reaction*) and this gives a yellowish-brown color to the medulla when the suprarenals are fixed in any solution containing these salts. Occasionally the coloration is more diffuse. A similar reaction is sometimes given by the blood and lymph in the vessels of the medulla in sections of the organ.

Besides the chromaffine granules above mentioned, others are found, somewhat coarser, soluble in water and alcohol but not in ether, and staining with difficulty. Lipoid and pigment granules are also sometimes seen. The relationship of these various granules to one another is not known. Those accessory glands which have a similar structure and derivation to the medulla of the suprarenal capsules and contain cells which are colored brown by chromic acid are termed *paraganglia* by Kohn, *chro-*

maphil bodies by Vincent, *chromaffine bodies* by most other authors* This last term—although not without objection on the score of etymology—has come to be so widely employed to express the specific character of the organs in question that it seems necessary to adopt it.

All the physiological effects which are about to be described as yielded by suprarenal extracts are obtainable from extract of medulla alone: intravenous injection of extract of cortex gives no appreciable result. In Teleostei, where the cortex is represented by the corpuscles of Stannius, and in the Elasmobranchs, in which the cortex is represented by the interrenal body and the medulla by the entirely separate "paired bodies" of Balfour, it has been shown by Vincent that the latter yield an active extract, whilst that of the other bodies is inactive. It was early proved by Moore that the action of the extracts of medulla is due to the material within the cells which becomes stained with chromic salts and which is readily oxidized by various reagents, giving characteristic color reactions with ferric cholride, chlorine water, and caustic alkalines (Vulpian). A similar reaction was obtained by Vulpian with a material contained in the blood of the suprarenal vein. This chromaphil substance, after being partly isolated by Fränkel, was prepared in a condition approaching to purity by v. Fürth, and by Abel, and eventually in a crystalline form by Takamine and by Aldrich. It has received various names, such as *suprarenin* (v. Fürth), *epinephrin* (Abel), *adrenalin* (Takamine), the last being that by which it is most widely known. But as this name has a commercial attachment, it is better to employ the neutral expression *adrenine* in place of it.** It has been estimated by Batelli that the suprarenal capsules contain about 1 part of adrenine per 1,000 of the whole gland, but as it only occurs in the medulla, which forms less than a fourth of the gland, the proportion in this would be proportionately greater.

Adrenine can be synthetized, methyl-acetyl-pyrocatechin being first prepared. This when reduced gives a racemic salt which can be split into *d*-adrenine and *l*-adrenine. The latter appears to be in all respects identical with the natural product, while the racemic salt and its dextrorotatory moiety are much less active physiologically.

---

*The carotid gland is of this nature. The coccygeal gland is different. It contains no chromaffine cells and appears to represent an arteriovenous anastomosis which is met with in certain lower mammals. The paraganglia invariably occur in close morphological and developmental connexion with sympathetic nerves and ganglia (Stilling).

**Chemically adrenine is *ortho-dioxyphenol-ethanol-nethylamine* and is related to tyrosine.

Chromaffine cells containing an adrenine-like substance have been found in almost all vertebrates, even in Petromyzon. They have also been described in the epithelium cells of the mantle in a gasteropod (Purpura lapillus) by Roaf. In Annelids they occur, according to Sommet and Pol, in some of the nerve-cells of the segmental ganglia. This is well seen in the leech, the bloodvessels of which react to adrenine like those of vertebrates. The development of these chromaffine cells is, according to J. F. Gaskell, correlated with that of a muscular vascular system.

Abel has made the remarkable observation that certain patches of skin glands in a large American toad (Bufo aqua) furnish a white, pasty secretion containing a large proportion of adrenine.

VESSELS AND NERVES.

The bloodvessels are very numerous. The arteries enter at the capsule and give off branches to supply the cortex with a rich capillary network. The bloodvessels do not penetrate the cell-columns of the *zona glomerulora and zona fasiculata* of the cortex, but run in the connective tissue septa between them. In the *zona reticularis* the capillaries are large, have a sinusoid character and come into very close relationship to the cells. They pass into the sinusoids of the medulla. According to Neumann, the bloodsupply of the suprarenal is more abundant than that of any other organ in the body, viz., as much as 6 to 7 c. c. per gramme and per minute with a bloodpressure of 130 m. Hg. This is even higher than that of the thyroid, which comes next with 5 c. c. per gramme and per minute. The respiratory exchange is also very high (Baumann).

In birds and reptiles the suprarenals have a venous bloodsupply as well as an arterial—blood being conveyed to each gland by a "portal" vein which is usually formed by the junction of two or three intercostal veins. The connective tissue septa of the cortex also contain lymphatics, which, like the blood capillaries, pass directly into the vessels of the medulla.

The suprarenals are very richly supplied with nerves. Each suprarenal receives no less than thirty-three nervous filaments (Kölliker) derived partly direct from the splanchnic, partly from the suprarenal plexus, which is itself constituted by branches from the coeliac, phrenic and renal plexuses. After forming a network in the connective tissue capsule, the nerves penetrate into the cortex, partly supplying its bloodvessels, partly its cell-columns. But most of the nerves extend to the medulla, where they form a dense plexus from which filaments pass to end between the secretory cells. Groups of sympathetic nerve-cells are occasionally found both in the medulla and in the deeper parts of the cortex.

EFFECTS OF SUPRARENAL REMOVAL: EPINEPHRECTOMY.

Addison's account of the disease he described and which he termed "idiopathic anaemia" led Brown-Séquard (1856) to test the effect of the removal of the suprarenal glands in animals. The operation, which was performed upon a number of animals of different species (rabbits, guineapigs, dogs and cats), was followed in every case of double extirpation by a fatal termination within thirty-seven hours of the removal. But a fatal result was produced also in all or nearly all the animals in which the lesion was unilateral, although subsequently Brown-Séquard succeeded in keeping some animals alive for a few days when only one capsule was removed. Since it is now well established that careful removal of one capsule under aseptic precautions is seldom fatal,* there can be little doubt that Brown-Séquard's results were in considerable measure the consequence of, or at any rate were complicated by, shock and sepsis, and that they could not be relied on as a proof that the suprarenal capsules are essential to life. This is indeed the opinion which was formed by most of his contemporaries. Nevertheless, looked at in the light of our present knowledge, it is certain that death must have been either caused or greatly accelerated by the removal of both capsules—since this is now known to be in most animals the invariable result of the double operation and occurs within a few days. There are, however, exceptions, especially in some species of animals: among which the white rat may be particularly mentioned. These exceptions are probably associated with the occurrence of accessory bodies, but whether these must be of cortical or medullary nature—or both—is not determined.

No effect of the extirpation—especially if the operation be performed on the two glands at an interval of a few days—is at first apparent. For some days there is little sign of anything wrong. Then the animal becomes less lively and exhibits signs of muscular weakness. The body temperature also becomes lowered. Soon the weakness becomes extreme, the pulse feeble, the bloodpressure low, and the respiration dyspnoeic. Death soon follows, sometimes immediately preceded by convulsions.

Experiments on adrenal transplantation have for the most part led to negative results. The graft almost invariably undergoes necrosis and disappears, although in some cases the cortical part has seemed to take for a time. Administration of suprarenal extract is unable either in Addison's disease or in the cachexia produced by extirpation, to prevent the usual fatal termination, although this may be somewhat deferred. The muscular weakness characteristic of Addison's disease may for a time tend to disappear with the administration, so that the ergographic record may again approach the normal. But such administration cannot, as in the case of cachexia thyreopriva, take the place of the internal secretion of the gland, and until measures are found to induce an implanted organ to grow, Addison's disease will probably continue to terminate fatally. With the progress of surgery, however, and especially the adoption of the methods of Carrel, the possibility of successful implantation seems less hopeless than was the case only a few years ago.

---

*An exception must be made for the guineapig in which unilateral extirpation is frequently followed by death. It may be remarked that the suprarenals are larger in proportion to its size in the guineapig than in any other animal.

After extirpation of one gland only there is a compensating hypertrophy of the other, and also of the accessory bodies. Castrated animals were found by Hultgren and Andersson to live much longer after the complete operation than normal individuals. This is also stated to be the case if the complete operation is performed in two stages, first the capsule of the one side and then that of the other being removed. This result is perhaps due to hypertrophy of accessory bodies. With regard to the total amount of suprarenal substance that must remain in order to maintain life, Biedl found that in cats, dogs and rabbits if one-eighth of the whole suprarenal substance is left the animals always survive. He concludes, after a survey of all the experimental evidence on the subject, that it is abundantly proved that "the suprarenals are not only important but are essential to life," and that it is probable that this is due to some material yielded by the cortex—although the loss of the adrenine which is supplied by the medulla may be contributory.

It appears that in other diseases than Addison's the functions of the suprarenal capsules may to a great extent become suppressed. In diphtheria, whether natural or produced experimentally in animals, it has been found that the amount of adrenine yielded by the medulla of the suprarenals is markedly diminished and may even in extreme cases disappear altogether. In cholera also the amount is greatly diminished, and it is stated that in this disease subcutaneous administration of adrenine is markedly beneficial. If the diminution in the amount of adrenine formed should be proved to hold good in other acute infectious disorders, it would seem not improbable that the interference with the functions of the suprarenal capsules is in large measure the cause of the muscular and cardiac weakness and general loss of tone which are prominent symptoms in these affections.

EFFECTS OF ADMINISTRATION OF SUPRARENAL EXTRACTS.

If an extract or decoction of suprarenal capsule—made with water or Ringer's solution—is injected into the vein of an animal, the most striking result obtained is an immediate and marked rise of blood-pressure (Oliver and Schäfer, 1894). This can be shown to be caused by contraction of the peripheral arteries. Along with this contraction a slowing of the heart's action may occur due to an effect on the cardio-inhibitory center and may somewhat limit the rise of blood-pressure. But if the vagi are cut, or paralyzed by atropine, the heart beats become enormously accelerated and also augmented in force (primarily by the action of the autacoid on the auricles, but also somewhat on the ventricles*), and this greatly increases the rise of blood-pressure. There is some diminution in the force of the respirations and occasionally a temporary cessation of breathing, especially in the rabbit. But this disappears long before the effect on the bloodvessels has ceased to show itself. The effect upon the vessels lasts a few minutes, gradually passing off: after its passage the blood-pressure is usually a little lower than before. The arteries which are most affected are those of the splanchnic area: those of the limbs and trunk rather less, although the cutaneous vessels are usually strongly contracted: those of the pulmonary system and of the brain only very slightly if at all, and those of the coronary circulation not at all: indeed, in some animals these last are dilated by the extract. According to Barbour, the human coronary arteries are constricted, whilst those of the calf, sheep, pig and other mammals are dilated (inhibited). It is always the smaller vessels which are most affected and in consequence of the great rise of pressure which their contraction produces the larger arteries tend to become passively dilated: this dilatation may be very great. The effect upon the vessels is seen after complete destruction of the central nervous system and after severance of the nerves to the part: indeed, even after the nerves to the vessels have been severed for a long time. It is therefore due to a direct action of the autacoid principle of the gland upon the contractile tissue. Nevertheless, such action only occurs in the case of suprarenal extract in tissues which are supplied with nerves from the sympathetic system, and in the embryo in such tissues only after they have received their nerve supply. And, as has just been stated, severance of the nerves, so far from stopping the action, tends on the contrary to make the tissues supplied by the severed nerve more easily excited by the autacoid**. Gunn and Chavasse have shown that adrenine has also an action upon the muscular coat of veins, causing tonic contraction in the case of peripheral veins and rhythmic contraction in the case of the superior vena cava near the heart.

---

*In birds, as Paton has shown, the augmentation is confined to the auricles.

**This has been found to apply not only to the bloodvessels but also to the pupil (Meltzer and Auer) and to the retractor penis (Fletcher), and is probably of general application.

If the amount of injected extract be great, the rise of blood-pressure caused by vascular contraction and heart acceleration may be enormous—three or four times the normal—and the amount of strain put on the heart is correspondingly great. Sometimes the heart muscle is unable to respond properly under these circumstances and the ventricular action becomes fibrillar—*delirium cordis* being produced, generally leading to instant death. This seems especially liable to occur in a particular phase of early chloroform anæsthesia (Levy). But as a general rule a number of successive injections can be made into a vein and each one will produce an amount of rise of blood-pressure proportionate to the amount of autacoid in the extract: the activity of extracts can in fact be gauged by this method. Other modes of testing the activity of suprarenal extracts are (1) by their action when added to Ringer's solution perfused through the bloodvessels of a frog the central nervous system of which has been destroyed, (2) by the effect produced upon the pupil of the excised eye of a frog when immersed in Ringer's solution to which a definite amount of the extract is added, (3) immersion of the excised uterus of a rat in a similar solution kept aerated by a stream of oxygen, (4) the same, but using a piece of intestine instead of uterus, and (5) the same, but using strips of artery.

The effect of suprarenal extract upon the heart and vessels is not the only action upon plain muscle, although it is the most obvious. Other involuntary muscular tissue supplied by sympathetic fibres is also affected. This may be in the direction of increased contraction (spleen, vagina, uterus*, vas deferens, retractor penis), or of inhibition (intestine, stomach, oesophagus, gall-bladder**). Certain of the plain muscles of the orbit and globe of the eye are also excited so that the eye tends to protrude and the palpebral fissure appears to enlarge: the third eyelid is retracted and the pupil widely dilated (Lewandowsky).***

A flow of saliva similar to that caused by excitation of the cervical sympathetic is also produced and is accompanied by contraction of the vessels of the glands: the flow of saliva is little apparent in the dog, but it is well marked in the cat, in which animal, as is well known, excitation of the sympathetic in the neck provokes an abundant flow from the salivary glands. The lacrimal glands are caused to secrete. Some influence is exerted upon the contraction of skeletal muscle, the curve of which is prolonged, although the latency is not increased. The effect, therefore, is not one of fatigue, but of increased excitability. The autacoid has further been found to defer the onset of fatigue of muscle and to assist its recovery. The arrectores pilorum, especially those of certain parts of the trunk, are stimulated to contract. As a rule there is no increase of sweat secretion. Adrenine also causes contraction of the pigment cells both of the skin and retina of the frog. It is noteworthy that sympathetic stimulation also produces this effect, at least this is so for the pigment cells of the skin. In birds some of the effects are different from those obtained in mammals. Thus in the duck the effect of adrenine is to cause decrease in the strength of the ventricular beats, which may more than compensation for the arterial contraction produced (Noël Paton and Watson). There is also contraction of the intestine instead of inhibition. Although the rule is perhaps not entirely without exception, it may be stated as a general principle that the result of suprarenal injection is identical with that of stimulating the endings of the sympathetic nerves throughout the body (Langley). It has been found by Dixon that if the endings of the sympathetic are paralyzed by apocodein adrenine is without action on the paralyzed parts. Apocodein is known to have the same effect upon the results of sympathetic stimulation.

---

*Cushaly has shown that the uterus of a pregnant case is contracted by adrenine whilst the virgin and non-pregnant uterus is usually inhibited.

**In some animals (e. g. ferret) the urinary bladder is contracted by suprarenal extract; in others it is relaxed (Elliott). This again corresponds with the effect of stimulating the sympathetic nerves passing to that viscus.

***Dropping a solution of adrenine into the conjunctival sac does not produce dilatation of the pupil unless the superior cervical ganglia of the sympathetic have been previously removed. This causes the dilatator pupillæ to be more sensitive to the action of the autacoid (see above). It has also been noticed that in diabetes—especially when associated with pancreatic disease or extirpation—the pupil will react to the instilled solution (Löwi).

As has already been pointed out, the above results are obtained even if the sympathetic nerves have been divided and allowed to undergo degeneration. It has, therefore, been concluded that under the influence of these nerves the tissues produce either at the junction of nerve and muscle (myo-neural junction of Elliott) or throughout the cell-protoplasm a material ("receptive or excitable substance" of Langley) which reacts with adrenine, and not only with it but also with other drugs, such as certain alkaloids which have a pronounced physiological action. And further, that this receptive substance increases either in amount or sensitivity after the action of the nerves is withdrawn by their severance.

A very minute dose of the active substance may, as Moore and Purinton showed, produce the reverse action upon the bloodvessels, viz., dilatation instead of contraction. Abolition of the effect of adrenine in producing contraction of plain muscle (and the same applies to the effects of sympathetic excitation) can, as Dale has shown, be obtained by exhibition of ergotoxin—an amine base obtained from ergot and also obtainable from the products of breaking down of histodine. Ergotoxin does not, however, paralyze the inhibition-producing effect of adrenine (or that of sympathetic excitation). Therefore, if, as sometimes happens, both contraction and inhibition can normally be brought about through the sympathetic and also by adrenine, when the contraction effect is abolished by ergotoxin, the inhibition effect alone appears, and this may produce a reversal of the normal action. Thus after a sufficient dose of ergotoxin, adrenine produces vaso-dilatation in place of vaso-construction, and inhibition of uterine contractions instead of increased contraction. Ergotoxin doubtless acts, like adrenine, on the neuro-muscular junctional or receptive substance.

The action of adrenine upon the terminal apparatus of the sympathetic system is common to a number of primary and secondary amines: the action has been termed "sympatho-mimetic" by Barger and Dale. The more nearly the structure of the amine approaches that of adrenine the more marked is this action. A knowledge of these facts has led to the production of other synthetic drugs having similar properties. The chemical history of adrenine furnishes indeed a striking illustration of the drug-like character of the autacoid substances produced by the endocrine organs.

Repeated intravenous injections into the ear-vein given at intervals of a few days produce (in the rabbit) degenerative sclerosis of arteries (Josué). This action is not specific to the suprarenal autacoid, but is the result of prolonged abnormally high blood-pressure, whether produced by autacoids or by drugs or in any other way.

Local application.—Applied directly to the smaller bloodvessels, the suprarenal autacoid produces marked contraction of the muscular coat (Oliver) and it is therefore of value in surgery as a styptic for arresting haemorrhage from small arteries.

Effects of subcutaneous injection.—Subcutaneous injection of the extract does not produce the rapid effect on involuntary muscle which is so characteristic of intravenous injection—although, as Meltzer and Auer have shown, intramuscular injection may show this result. But large doses of the extract or of the separated autacoid substance of the medulla produce in rabbits and some other animals serious or even fatal symptoms, probably by causing extreme contraction of the arterioles of the central nervous system. After a period of excitement, with rapid pulse and respirations, a period of depression supervenes. Accompanying this depression, the muscular movements are first slowed: there is then paralysis of the limbs and later of the respiratory muscles, with asphyxial convulsions. The body temperature becomes lowered some little while before death. The paralysis is central. *Post mortem* a general hyperaemia of the viscera is evident and abundant haemorrhages are seen to have occurred in various parts. If a first dose is not fatal, a certain amount of immunity may be produced to a subsequent dose (Vincent). The injection also invariably produces glycosuria (Blum), even if the animal has been fed on a diet free from carbohydrates (Noël Paton).

This appears due in part to an action on the liver-cells, in part to an effect on the pancreas: for, as Herter and Wakeman have found, the direct application of the autacoid to the pancreas will cause glycosuria. This will be again referred to in considering the influence of the suprarenal on other glands and in connexion with the internal secretion of the pancreas.

Considerable amounts of the extract can be taken into the stomach without producing any marked physiological result. This is probably due to the fact that the active material is destroyed almost as fast as it is absorbed. That such destruction is readily produced is obvious from the fact that even when large doses are injected into a vein the effects pass off within a few minutes. Where the active substance becomes destroyed is not known, although it has been conjectured that it may be in the tissues generally, especially the muscles and liver. The passing off of the effect may in part also be due to a fatigue of the excited tissues, rendering them less responsive. For it is affirmed that the active principle does not at once disappear from the blood, but may be detected by testing this fluid on another animal. This statement is, however, denied by Trendelenburg. Meltzer finds that adrenine is destroyed by cerebrospinal fluid. (It was shown by Oliver and Schäfer not to be destroyed by blood nor eliminated by the urine.) It has been found by W. Cramer that the autacoid is rapidly inactivated *in vitro* by dilute formaldehyde, and it may well be that the inactivation *in vivo* is brought about by contact with metabolism products which have a similar action.

Influence of nerves on the secretion of adrenine by the suprarenal capsules.—It was shown by Biedl that the stimulation of the splanchnic nerves is accompanied by an increased bloodflow through the organ. The result is even better marked when these nerves have been cut and allowed to degenerate for two or three days so that only the vaso-dilators are acting. Tscherboksaroff, in confirmation of an observation by Dreyer, found that during excitation of the splanchnic in a dog the blood passing from the suprarenal capsule by its vein produces a greater effect in raising the blood-pressure of another dog than the blood of the suprarenal vein under ordinary circumstances, and concluded that adrenine is passed into the traversing blood under the influence of impulses conveyed by these nerves. He also found a larger amount of adrenine in the suprarenal capsules after the stimulation. But the actual proof of secretion under the influence of nerves is most satisfactorily furnished by the experiment of Asher, who found that after ablation of the stomach and intestines and all the other abdominal organs, stimulation of the splanchnics causes a marked rise of blood-pressure, which fails if the suprarenal bloodvessels are compressed. Elliott and Tuckett were able to exhaust the suprarenal of its adrenine by stimulation of its nerves and Pende found that section of the splanchnics leads eventually to atrophy of the medulla. According to Ehrmann, the secretion is uninfluenced by atropine or pilocarpine, which affect most of the external secretions.

That the passage of adrenine into the blood is always proceeding in sufficient amount appreciably to raise the tone of the bloodvessels seems somewhat doubtful. Oliver and Schäfer found that, even in the blood of the suprarenal vein, there is not always enough to cause a rise of blood-pressure when a few c. c. are injected into a vein. But it is possible by employing more delicate physiological tests—e. g. the reaction with the enucleated eye of the frog or by passing extracts of the dried and deproteinized blood through the bloodvessels of the frog—to obtain evidence in some animals of its presence not only in the blood of the suprarenal vein, but to a less degree in the blood generally. The amount is, however, normally very small, even in the former: not more than about one part in a million, according to Hoskins, McClure and O'Connor. This indicates that the rate of passage into the blood is usually slow: probably it varies at different times. If a very small percentage be present, the blood-pressure may be lowered instead of raised. We cannot, therefore, assume that the normal tone of the vascular system depends on adrenine in the blood, although that the maintenance of vascular tone is in some animals assisted in this manner is shown by the experiment of compressing the suprarenal vein. Such compression may be followed by a considerable fall of blood-pressure, which quickly recovers, and, indeed, more than recovers, its former height on relieving the compression. Temporarily compressing the abdominal aorta produces somewhat similar results. It is possible that the partially resumed tone of peripheral vessels which comes on after section of their nerves may be due to an increase of adrenine in the blood, perhaps assisted by an increase of the autacoid of the posterior lobe of the pituitary body. We must also take into consideration the circumstance that after section of the nerves to plain muscle this tissue becomes much more sensitive to the influence of adrenine.

Trendelenburg estimated the amount of adrenine in the blood of the suprarenal vein of a cat and found that on the average .003 mg. was passed out of the two organs per minute. From the data thus obtained he reckons that about 5 mg. per kilo body weight is formed in 24 hours. After draining off a large quantity of blood and causing a considerable fall of blood-pressure, the amount of adrenine passed per minute was not increased. G. N. Stewart states that nerve massage of the suprarenals leads to the passage of an increased quantity of adrenine into the blood: when the massage is light a depressor effect is caused, when vigorous a pressor effect; but, according to Hoskins and McClure, never so large a pressor effect as with "ordinary therapeutic dosage."*

Von Aurep finds that stimulation of the splanchnic produces a double rise of blood-pressure; the first being due to direct stimulation of the vasomotors, the second to the outpouring of adrenine into the blood. This latter phase fails to appear if the suprarenals are extirpated. In the cat Cannon found that dilatation of the pupils and upstanding of the fur which accompany sudden alarm or excitement are associated with an increased outpouring of adrenine into the blood, and he has drawn attention to the fact that many of the phenomena which characterize violent emotional states (both in animals and man) are similar to those which are produced by excess of the suprarenal autacoid in the blood. It would further appear that the glycaemia and glycosuria which result from Bernard's sugar puncture is accompanied by and probably largely due to the passage of an excess of adrenine into the blood, causing increased transformation of the liver glycogen into glucose.

Section of the splanchnics diminishes the amount of adrenine which is passed into the blood: according to Elliott, it is only the reflex secretion which is affected; an automatic solution goes on all the time.

Dale and Laidlaw, and Cannon and Bürger, have shown that it is highly probable that certain alkaloids (e. g. nicotine and pilocarpine) exert their action on involuntary muscle, not directly but by stimulating the suprarenals to increased activity. This has also been shown to be the case for morphia, chloroform and ether by Elliott and to be brought about through the splanchnic nerves.

RELATIONS OF THE ADRENALS TO OTHER GLANDS AND INTERNAL SECRETIONS.

Ott and Scott state that various organ extracts produce an increased secretion of adrenine into the blood, viz., thyroid, parathyroid, pituitary, thymus, pancreas, testicle and ovary. The variety of these would seem to indicate that such effect can hardly be indicative of a specific relationship. On the other hand, the secretion of the adrenals has an influence upon many diverse organs and glands—including the other ductless glands—seeing that the autacoid secreted by the medulla activates sympathetic nerve-endings throughout the body.

---

*It may here be mentioned that so small an addition to the blood of a dog as .005 mg. to 1 liter of blood (equal 1 part in 20 millions) is sufficient to produce a distinct rise of pressure. The same strength of solution of adrenine is sufficient to dilate the pupil of the excised eye of the frog.

With the sexual glands.—A direct relationship between the development of the sexual glands and that of the suprarenals may be regarded as well established, although the nature of the relationship—whether through the nervous system or, as is more probable, through chemical agencies—is not precisely known. The connexion appears to be more with the cortex of the adrenals than with the medulla. During pregnancy the whole gland undergoes enlargement: this change affects the cortex much more than the medulla. Whilst hypertrophy of the cortex is stated to occur as the result of castration, various observers have found that it is also associated with sexual precocity. Further, in diseased conditions resulting in hypoplasia of the adrenals, changes in the testicles, especially in their interstitial cells, have been noted. On the other hand, Elliott and Tuckett deny connexion between the suprarenals and the sexual glands. They associate the cortex more particularly with the development of the muscular system: they also point out that the lower the animal in the vertebrate or at any rate in the mammalian series the greater is the relative development of the cortex. More than one observer has drawn attention to the similarity of appearance between the cells of the cortex of the suprarenals and those of the corpus luteum, but there is at present no evidence of either morphological or functional relationship between these organs.

With other glands.—Injection of suprarenal extract was found by Langley (in the cat) to produce an active secretion of all the salivary and mucous glands of the mouth, gullet and trachea. The secretion is not arrested by small doses of atropine and is similar to that produced by sympathetic excitation. The lacrimal glands are also stimulated to active secretion: and this is said by Yakawa to be the case with the gastric glands as well.

With the liver.—The secretion of bile is increased by adrenine. But the most noteworthy effect on this organ is upon its glycogenic function, for the autacoid of suprarenal medulla even in small doses produces a rapid conversion of the liver glycogen into sugar, which passes into the blood and eventually into the urine. The effect is similar to that caused by Bernard's sugar puncture of the medulla oblongata and by excitation of the splanchnics. On the other hand, after section of the splanchnics Bernard found that puncture of the medulla oblongata fails to cause glycosuria. These effects on the liver are probably in large measure if not entirely due to excitation of the sympathetic fibres passing to the suprarenals, causing the outpouring of an excess of adrenine into the blood and this again excites the terminal apparatus of the sympathetic nerves in the liver-cells. Kahn noticed that if one adrenal be left its medulla shows indications of overactivity and far less adrenine is stored within it than normally. He states that in the guineapig the blood can be shown to contain an excess of adrenine after the sugar puncture. In confirmation of this A. Mayer found that Bernard's puncture is not effective after removal of the adrenals. Macleod and Pearse have observed that adrenine produces hyper-glycæmia even after division of the hepatic plexus, and that only when the adrenals are intact is it possible to produce hyperglycæmia by stimulation of the nerves of the liver. Adrenine is therefore in some way necessary to the activity of these nerves: possibly by rendering them more sensitive. Doyen and Gautier state that the effect of adrenine on the liver glycogen can be prevented by atropine. Ergotoxine is also said to antagonize this action of adrenine.

If the liver is free from glycogen, adrenine injection will not only produce glycaemia and glycosuria but may, even in fasting animals, cause glycogen to be stored in considerable quantity: this is associated with the fact that the metabolism of proteins is increased under the influence of adrenine, and the protein is in this case the source of the carbohydrate which is formed (Noël Paton). On the other hand, O. Schwarz has found the liver glycogen to disappear in rats in which the suprarenals have been removed, although it can be restored by liberal feeding with glucose and cane sugar (but not by laevulose or starch). Ringer states that if the glycogen of the liver is got rid of by phlorizin adrenine does not increase the glycosuria.

With the pancreas.—Pemberton and Sweet state that removal of the suprarenals causes a flow of pancreatic juice which is stopped by injection of adrenine, although under normal conditions the flow of pancreatic juice seems not to be affected by the intravenous injection of adrenine in moderate doses. The internal secretion of this organ is however directly affected by this hormone. Herter and Wakeman found that the mere swabbing of the exposed pancreas with adrenine solution provokes an intense glycosuria, comparable with that produced by extirpation of the organ. But the glycosuria and the hyperglycæmia caused by pancreatic extirpation is increased, as several observers have found, by adrenine, so that the whole of its effect on carbohydrate metabolism is not exerted through the pancreas but part must be directly on the liver-cells. We have in fact already seen that adrenine has a direct effect on the glycogen storage of the liver. But this is influenced by the internal secretion of the pancreas. Thus Zuelzer failed to get adrenine-glycosuria when he injected pancreas extract at the same time as the adrenine; on the other hand, he states that tying the suprarenal veins is effectual in preventing glycosuria pancreatopriva. These experiments show that carbohydrate metabolism is in some way regulated by the interaction of the adrenals and pancreas upon the liver-cells. Graham Lusk, however, from a study of the respiratory quotient in a glucose-fed dog to which adrenine was administered, comes to the conclusion that this autacoid does not act on carbohydrate metabolism by specifically inhibiting the internal secretion of the pancreas but that its effect on carbohydrate metabolism is related to its vasoconstrictor action. The subject will again come up for discussion when the internal secretion of the pancreas is dealt with.

With the thyroid pituitary body.—The mutual relations of the thyroid and suprarenals have already been discussed under the former organ. Those of the pituitary suprarenals will be considered when the functions of the pituitary are dealt with.

LECTURE IV.

THE PITUITARY BODY, OR HYPOPHYSIS CEREBRI.

The next of the ductless glands to claim our attention is the pituitary body. The study of this organ has sprung into prominence within quite recent years. Although somewhat vaguely connected with growth phenomena and shown (1887) to be related to certain forms of abnormal development of the body and especially of the skeleton, it was not until 1895 that it was suspected of having an active function: by most it was regarded as a rudimentary structure having some morphological interest but little or no physiological importance. Now, on the contrary, it is known that from one portion of the gland important autacoid principles can be extracted which exert an active influence upon some of the most essential organs of the body; whilst from another portion it seems probable that other principles are furnished to the blood which serve as influential chemical regulators of nutrition and growth. Moreover, by most of those who have worked at its functions it is thought to be essential to life. In conformity with this it is found throughout the whole series of Vertebrata with very few exceptions, and these may ultimately prove only apparent.

The pituitary body structure is in man a small organ about the size of a hazel-nut without the shell: it weighs a little more than half a gramme and lies at the base of the brain in the sella turcica of the spheroid bone. It is connected with the floor of the 3rd ventricle by a short, hollow, funnel-shaped stalk—the *infundibulum*. This stalk is composed of nervous tissue, and expands in the interior of the gland into what is known as the nervous part—*pars nervosa*—which when examined by appropriate methods is found to be mainly composed of neuroglia fibres and cells (Herring). In some animals the cavity of the infundibulum with its lining of ependyma is prolonged in the form of a blind canal far into the pars nervosa, but in man this canal has become obliterated, although it existed in the early embryo.

In front of and partly surrounding the pars nervosa the organ is formed of a mass of epithelium cells, granular in appearance and highly vascular. This constitutes the *pars anterior seu glandularis*. In the middle of the organ it is separated from the pars nervosa by a cleft lined by cubical or flattened epithelial cells and filled with glairy fluid. In the adult human subject the cleft is generally found to be obliterated or broken up into isolated cysts containing a colloid-like material. The cleft is all that remains of the original tubular structure of the pars glandularis, which in the early embryo was formed by a pouch-like outgrowth of the buccal ectoderm (Rathke's pouch) communicating at first with the cavity of the mouth, although ultimately the communication has become obliterated.*

The pars nervosa does not actually abut against the intraglandular cleft, but is separated from it by a layer of epithelial tissue of varying thickness, which was also originally derived from the epithelium of Rathke's pouch but which differs in certain respects from the *pars anterior seu glandularis*—its cells being less granular and its bloodvessels less numerous. This portion of the epithelium is known as the *pars intermedia* since it lies between the *pars anterior* and the *pars nervosa.* From the former it is separated by the cleft just described: from the *pars nervosa* there is no well defined line of separation—indeed cells of the *pars intermedia* may extend for some distance into the *pars nervosa* between its neuroglial fibres, and impart to it an important functional significance, which will be referred to later in considering the mode of secretion of the *pars intermedia.* It is not difficult to split the gland across the middle in the situation of the intraglandular cleft, thus separating the larger *pars anterior* from the combined *pars nervosa* and *pars intermedia.* When such a separation is effected the term *pars posterior* or *posterior lobe* has been given to *pars nervosa+pars intermedia,* the *pars anterior* being termed in contradistinction *anterior lobe.*

Pars anterior seu glandularis.—As already mentioned, this is formed of trabecular masses of epithelium-like cells between which are very numerous sinus-like blood capillaries lying in intimate relation to the cells, which are indeed sometimes set closely round the blood spaces. So abundant are the bloodvessels that a photograph of a section of this part of the injected organ appears almost black: the contrast with the *pars intermedia* and *pars nervosa* being well marked. The *pars anterior* is supplied with blood by about eighteen to twenty small arterioles which converge towards the infundibulum from the circle of Willis and pass into it along the stalk (Dandy and Goetsch). They open into the sinusoidal channels which in this part take the place of capillaries; the blood from these passes away by venules along the stalk. This part of the pituitary probably constitutes the most vascular organ in the body, even more so than the suprarenals.

---

*Traces of the original connexion with the buccal ectoderm may, however, persist in exceptional cases even in the adult (Erdheim, Haberfeld), as the so-called *pharyngeal hypophysis.* Another vestigial structure—the *parahypophysis* —has been described by Dandy and Goetsch as occurring in the dura mater lining of the sella turcica.

The cells of the *pars anterior* are commonly classified under two main heads, viz., clear, non-staining or chromaphobe, and dark granular, staining or chromaphil: but the granular cells are again divisible into oxyphil and basophil, i. e., those staining with acid and basic dyes respectively, the basophil cells being normally however far the fewer in number. It has been suggested that these three types of cells represent different stages of the same cell, but this is not certain. It is more probably true for the chromaphobe cells and for the cells with oxyphil granules: those with basophil granules appear to be of a different nature. The cells containing oxyphil granules are very distinct. They may sometimes be seen accumulated around the blood-sinuses like the cells of an ordinary secreting gland around the lumen of the alveolus. In some animals all the cells of the *pars anterior* are set like a columnar epithelium round the blood-sinuses—this is strikingly shown in Elasmobranch fishes such as the skate—while in the tortoise columnar cells surround closed vesicles containing a colloid material. The basophil cells are, when present, mostly found near the periphery of the trabecular masses. In pregnancy peculiar large finely-granular cells are observed in considerable number (Erdheim and Stumm): these large cells have been designated "pregnancy cells"; they appear to be merely developments of the chromaphobe cells. Oxyphil cells are described as being unusually abundant in the enlarged gland of acromegalic subjects, where they form adenoma-like masses (Erdheim). All the cells contain numerous fine fatty globules.

Besides the blood-sinuses there is a small amount of reticular connective tissue between the cells. A few nerves have been traced into the *pars anterior* from the *pars nervosa*.

Under certain circumstances in man or mammals, and especially in cases of thyroid absence or insufficiency a product of secretion of the anterior lobe cells which has the appearance of "colloid" appears to accumulate between them, and in parts the cells come to be arranged round the colloid in the form of vesicles which are not very unlike those of the thyroid gland. Normally this appearance is not observed in the *pars anterior* (Herring) although it is characteristically seen in the *pars intermedia*.

Pars intermedia.—As has been stated, the *pars intermedia* although well provided with bloodvessels is far less vascular than the *pars anterior*. At the circumference of the intraglandular cleft these two parts are continuous into one another without a sharp line of demarcation, although it is easily possible to distinguish them by the character of their cells. Behind the intraglandular cleft the *pars intermedia* forms a well marked layer of varying depth; it also extends as a thin layer over the surface of the *pars nervosa,* as well as over the neck of the gland, connecting the *pars nervosa* with the infundibulum. The cells of the *pars intermedia* have not the coarse oxyphil granules which are characteristic of the granular cells of the *pars anterior,* but they are finely granular. The granules are neutrophil and stain neither with oxyphil nor with basophil dyes. They often surround well defined vesicles occupied by an oxyphil colloid material: occasionally these vesicles are unusually large and numerous. especially in the neighborhood of the intraglandular cleft. In addition to these colloid masses some of the cells of the *pars intermedia* may often be seen in different stages of conversion into globular hyaline bodies, their protoplasm and nucleus becoming swollen; the latter may become indistinct and disappear altogether. Sometimes the globules thus produced may be described as granular in character rather than hyaline. In both cases the cells may break down, setting free the hyaline or granular substance. As has already been mentioned, the *pars intermedia* is by no means everywhere sharply marked off from the pars nervosa, for strands of the cells of the *pars intermedia* may extend a variable distance between the fibres of the *pars nervosa.* The hyaline and granular globules which have been derived from its cells also pass into the substance of the *pars nervosa* and are seen between its fibres: they can in fact be traced as far as the continuation of the third ventricle into the stalk. This fact was first pointed out by Herring, who concluded that it is to be taken as an indication that the hyaline and granular substances which are produced by conversion and breaking down of the cells of the *pars intermedia* form the secretion of this portion of the pituitary and that this secretion thus passes into the cerebro-spinal fluid. In confirmation of this conclusion evidence that the active principle of the posterior lobe of the pituitary is present in cerebro-spinal fluid has been obtained by Cushing and Goetsch, although their conclusion has been traversed by Carlson. The hyaline globules are greatly increased as the result of thyroidectomy (Herring) and also after section of the infundibular stalk (Cushing and Goetsch).

Pars nervosa (also known as the *neuro-hypophysis* or *infundibular body*).—This is formed almost entirely of neuroglia fibres with neuroglia cells scattered amongst them. Many of the fibres arise from these cells, others from the ependyma cells of the infundibulum and of its extension into the gland. Between the neuroglia fibres, especially in the neighbourhood of the stalk but also in other situations, is to be seen the hyaline and granular matter already referred to; sometimes in the form of swollen cells such as have been described in connexion with the *pars intermedia,* sometimes as amorphous masses; these masses are traceable, as already mentioned, to the infundibulum where they may be seen passing through the ependyma into the cavity of the ventricle. There can be little doubt that the physiological activity of extracts of the *pars nervosa* is connected with the presence of this substance within it, since extracts of ordinary nervous and neuroglial substance have not the same action. Some authors have described nerve-cells within the *pars nervosa*—but according to Herring these do not occur, and there are very few nerve fibres. The *pars nervosa* is the least vascular portion of the pituitary, its bloodvessels being comparatively few in number.

Physiology of the Pituitary—Effects of Extracts.

The discovery in 1895 by Oliver and Schäfer that extracts of pituitary have a remarkable influence upon the vascular system, producing a great rise of blood-pressure with contraction of vessels, led to the attention of physiologists being drawn to this gland, which had up to that time been almost entirely neglected by them. Howell showed that the action is confined to extracts of the posterior lobe—which, as we now know, includes *pars intermedia* and *pars nervosa*—and it has since been shown that it is yielded by extracts of either *pars intermedia* or *pars nervosa* alone, but rather more distinctly by the *pars nervosa* than by the *pars intermedia* (Herring). This is an additional reason for believing that the material which produces this action is formed by the *pars intermedia* and passes from this into and through the *pars nervosa.* The effect of the extract upon the bloodvessels is a direct one and is not due, as is the case of the suprarenal autacoid, to its stimulant action on the sympathetic endings. The effect on the heart is also different; for whereas—with the vagi cut or paralysed—adrenine causes a marked acceleration of the heart (sympathetic stimulation), the pituitary autacoid causes a slowing of the heart's action along with increase in force of the individual beats (Howell).* Moreover, whilst adrenine either produces no action on the coronary vessels or according to some authors dilates them, the autacoid of the pituitary constricts them as it does other systemic arterioles; and the same is the case with the pulmonary vessels. The pressor or stimulating autacoid also has the peculiarity that, as was first shown by Howell, the effect of a second dose administered a short interval (30 minutes or less) after the first usually causes no effect; or, if any, not a rise but a fall of blood-pressure (Schäfer and Vincent), which may or may not be followed by a slight rise. Probably therefore there is present in the extract a second autacoid which is antagonistic to the first in its action and should most likely be classed with the chalones or inhibitory autacoids. On the heart's action the repeat dose has the same effect as the first dose, i. e., the beat is strengthened (Biedl). The effect on the uterus (see below) can also be repeated if the autacoid is administered at short intervals. The pressor effect and the effect on the heart produced by the stimulatory autacoid or autacoids usually lasts a considerable time (a quarter to half an hour or more), varying, however, with the dose; the depressor effect of the inhibitory autacoid has a much shorter period of activity. The renal arteries form an exception to the constrictor effect produced by pituitary extract since they dilate as a consequence of the addition of the extract to the circulating blood: the dilatation is correlated with an increase of secretion of urine. This increased secretion may be in part brought about by the increased flow of blood through the kidney vessels, due to the circumstance that they undergo dilatation, while all the other systemic arteries are contracting; but that it is to a certain extent brought about by a specific effect of one of the pituitary autacoids is probable from the fact that it may occur in the absence of an arterial change.*

---

*In the bird it augments the ventricular contractions, whereas adrenine affects the auricles only in these animals (Paton and Watson).

The extract of pituitary acts upon other plain muscle tissue besides that of the bloodvessels. Thus it powerfully affects the uterus (Dale), even in the minute doses,** as well as the bladder and intestine (Blair Bell and Hick): it also produces dilatation of the pupil of the excised eye of the frog (Cramer). In some of these actions it resembles adrenine, but the stimulating autacoid of the pituitary is certainly different both chemically and physiologically from that of the suprarenal. Nor does it specifically stimulate structures innervated by the sympathetic as does adrenine; moreover, neither apocodein nor ergotoxine affect the results obtained with it. Probably it produces a direct effect upon the contractile substance of the cells which it stimulates.

---

*The effects on the kidney will be more fully dealt with later on.

**The uterus is also rendered more excitable to influences reaching it through its nerves. According to Dale, pituitary extract acts on plain muscle more by increasing its sensitiveness to normal stimuli than by acting as a direct excitant. Thus when administered in pregnancy before the commencement of parturition it produces no effect: but its action during parturition is well marked.

The extracts of posterior lobe also contain an autacoid which influences the secretion of the mammary gland. If injected either into a vein of a lactating animal or intramuscularly in a nursing woman it causes a determination of secretion towards the nipple, accompanied or preceding by a tingling sensation in the breast: and if in a lactating animal the nipple be cut or if a fine canula be inserted into one of the ducts the milk flows out and the gland becomes emptied.*

Lastly, it is found, as with adrenine, that the autacoids of the posterior lobe of pituitary have an important influence upon carbohydrate storage. When injected either into a vessel or subcutaneously they produce disappearance of glycogen from the liver and they facilitate the production of alimentary glycosuria by lowering the limit of assimilation of sugar (Borchardt). Whether all these effects are produced by one and the same active principle has not as yet been definitely determined, for the autacoids of the pituitary have presented much greater difficulties in the way of isolation than those of the suprarenal medulla, although recently more than one investigator has succeeded in obtaining crystalline substances which reproduce the effects of pituitary extract. Herring has obtained certain differences of effect according as the extracts are prepared from the *pars intermedia* or the *pars nervosa*—suggesting that the autacoids undergo some alteration in passing through the latter. Thus the *pars intermedia* of the ox excites the uterine muscle and also the mammary gland more than the plain muscular tissue of the bloodvessels, and has no specific effect on the kidney—nor do repeat doses show any immunity, or hinder extracts of the *pars nervosa* from producing the usual effects on blood-pressure, kidney, etc., as well as its effects on uterus and milk secretion.

Subcutaneous and intramuscular injections—especially the latter—produce effects similar to those caused by intravenous administration, although less rapidly. On the other hand, buccal administration has little or no effect on the bloodvessels, heart and plain muscle. This is not due to destruction of the active material by the gastric juice, but probably to its slow rate of absorption from the alimentary canal. Addition of the gland substance to the food of growing animals or its administration by subcutaneous injection has been alleged by some observers to check growth and delay ossification, but this statement appears to be either inaccurate or not to be of general application. In white rats certainly the growth is not obviously affected by the addition of small amounts of pituitary to the ordinary food nor is any obvious effect produced upon nitrogenous metabolism. In animals in which the gland has previously been experimentally removed or injured (see below) Cushing has described amelioration of the symptoms as the result of adding large amounts of the gland substance to the food. Pituitary extracts and derivations from them have been administered—with greater or less effect—in a variety of disorders, including surgical shock, intestinal inertia, uterine inertia, amenorrhoea, vesical inertia, deficiency of milk secretion, haemoptysis, exophthalmic goitre, hay fever, rheumatoid arthritis, rickets and osteomalacia.

---

*These effects will be further alluded to later.

Effects of Removal or Destruction—Experimental Apituitarism.

A large number of experiments have been made with the view of determining the nature of the symptoms which follow removal of the pituitary. The results of these have been somewhat conflicting in character—due in some measure to the differences of method employed to arrive at the position of the organ, which is obviously a difficult procedure, deeply as it is placed at the base of the brain. Thus while one set of operators (e. g. Horsley and Handelsmann, and Aschner), have preferred to approach it (in animals) through the buccal cavity and basis cranii, in order to avoid disturbance of the brain, others (e. g. Paulesco, Cushing, Biedl) have not hesitated to attack it through a large aperture in the side of the skull, another similar aperture being made on the opposite side so as to enable the hemispheres to be pushed over in order to obtain a good view of the organ; which can in some animals, such as the dog, be got at without much difficulty by this procedure. The former method has the disadvantages (1) that one is working at the bottom of a deep pit from the walls of which blood is constantly oozing so as to obscure the operation, and (2) that it is impossible to secure asepsis. By the use of the lateral method these disadvantages are for the most part avoided but it has been alleged that the serious results which are described as following removal of the organ by this operation are due to shock and paralysis caused by the unavoidable insult to the brain.

Paulesco was the first to state definitely that complete removal is in every case sooner or later fatal. This result was obtained with animals from all classes of vertebrata. Most of the hypophysectomized mammals died within two or three days. He also obtained a fatal result merely by severing the stalk connecting the pituitary body to the base of the brain. Paulesco's statements were confirmed by Harvey Cushing and his fellow workers, who for the most part restricted their experiments to dogs. They found that adult animals usually succumb after total deprivation in from two to five days, whilst puppies survive longer (ten to thirty days); they ascribe this difference to the greater functional adaptability of accessory glandules which are probably present in the roof of the pharynx in young animals. In all cases of long survival a fragment of the gland, including some of the anterior lobe, was found *post mortem* and they attribute the survival to such a remnant. On the other hand, they obtained no definitely recognisable symptoms by severance of the infundibular stalk, a procedure which, as we have seen, Paulesco alleged to be fatal. Removal of part only of the anterior lobe is not at once fatal but leads to certain definite changes in metabolism, which are considered by Cushing to be due to deficient secretion, a condition to which he has given the name *hypopituitarism*. Similar results to those of Paulesco and Cushing have been obtained by Biedl and recently by Ascoli and Legnani.

The symptoms of complete removal or *apituitarism* (cachexia hypophyseopriva) are described by Cushing as follows: On the day after the operation the animal (dog) usually appears normal with fair appetite and no characteristic signs of loss of secretion. Gradually it becomes lethargic, refuses food and responds slowly or not at all to the voice. Later the respiration becomes slow and the pulse both slow and feeble, the musculature limp, often with tremors and fibrillar twitching; the back is arched, and the temperature subnormal; finally, often within 48 hours, the animal becomes comatose and dies in this condition. According to Cushing immediate replantation of the removed gland in some other structure causes an abatement of the symptoms and prolongs life, but whether indefinitely or not is uncertain and would doubtless depend upon whether the graft underwent subsequent degeneration. In Cushing's later experiments extirpation of the gland seems to have been less certainly fatal or longer delayed, the animals exhibiting the symptoms rather of *hypo-* than of *a-pituitarism*. This may be due to small portions of the gland having been left behind or to the employment of younger animals or to the vicarious activity of some other organ or organs. The fact is interesting because Aschner, who has performed a large number of extirpations mainly by the inferior operation (through the base of the skull), has not found the gland to be essential to life—or at least has obtained very considerable prolongation of life after its entire removal. It must, however, be regarded as doubtful if it is possible to effect complete removal by this operation. Aschner himself, who admits the difficulty, regards the small residue as unimportant. In all his cases symptoms of hypopituitarism showed themselves. His animals, if young, remained small: their milk teeth were retained and also their lanugo hair: their epiphyses did not ankylose. The thyroid was enlarged, the thymus persistent, and the cortex of the suprarenal thickened. In the adult the chief effect of the removal was the putting on of fat. In pregnant animals Aschner found removal of the pituitary to be always followed by abortion.

The experiments of others have yielded different results. Thus Horsley and Handelsmann, who performed complete extirpation in a number of animals chiefly by the operation through the base of the skull, state that although a large proportion of their cases died within forty-eight hours they consider this was due to causes incidental to the operation (shock, haemorrhage, infection). Those that survived showed none of the symptoms above described as characteristic of apituitarism. But in view of the results of clinical observations on the effects of destructive disease of the pituitary it must be regarded as doubtful whether the removal of the gland has been as complete in these cases as in those described by Paulesco and Cushing, the operative method employed by whom seems on the whole less open to objection than that in which the gland is reached through the basi-spheroid.

Experimental hypopituitarism.—The results of lesions which involve only partial removal or destruction are in some respects even more interesting than those in which the extirpation is complete and the symptoms more acute. The most striking effects are obtained in young, growing animals. Retardation of growth after hypophysectomy has been described by various authors and that this is a characteristic of diminished amount of pituitary substance and concomitant diminished secretion of autacoids by the gland has been established by the experiments of Cushing and of Biedl. The work of Aschner, which has just been alluded to, also obviously has an important bearing upon this point, although Aschner himself believes that in most of his operations the removal was complete and that the condition was one of apituitarism. The retardation in development shows itself in a general diminution in size, in imperfection in the ossification process, and in the sexual organs, which long retain their infantile condition. At the same time there is a marked tendency to fat formation, so that the actual weight of the operated animals may exceed that of the controls. Even in adult animals a tendency to obesity is a characteristic feature after partial hypophysectomy. Accompanying this tendency and possibly acting as a causative agent, is a high tolerance for sugars, the limit of alimentary glycosuria being markedly increased. This is the directly contrary effect to that produced by injection of posterior lobe extract and is doubtless the result of deficiency of posterior lobe secretion which in Cushing's opinion "is essential to effective carbohydrate metabolism." It was found by Cushing (in conjunction with Goetsch and Jacobson) that immediately after the operation of partial hypophysectomy a temporary glycosuria would at first usually ensue. This result is perhaps due to a dislodgement of accumulated secretion and irritation due to the injury. The effect, however, soon passes off and is followed by the permanent condition of increased tolerance for sugar. Animals which have acquired this tolerance will suffer loss of the pancreas without becoming diabetic. Injury to the posterior lobe or even its manipulation is, probably for the same reason (release of accumulated secretion and possibly temporary irritation due to the injury), often immediately followed by marked glycosuria and also by polyuria (Schäfer), which may persist long after the glycosuria has disappeared or may be present from the first without glycosuria (diabetes insipidus). In one case of such injury to the pituitary in a dog operated upon by Schäfer the amount of urine rose from 40 c. c. per diem to 230 c. c., and during the following 19 days remained at an average of 119 c. c. In another it rose from 110 c. c., the average of 11 normal days, to 182 c. c., the average of the 11 days immediately succeeding the operation. It was, however, much higher than this on the 3d, 4th and 5th days, averaging 266 c. c. Mere exposure of the pituitary was found to have no such effects. A case in man has been recorded by Simmonds in which there was a malignant tumour of the *pars nervosa* extending to the *pars intermedia,* with marked diabetes insipidus (10 to 19 litres of urine per diem). This is probably a case of the cells of such a tumour assuming the functions of the tissues they are invading (see footnote, page 14). It has been found by Cushing that stimulation of the cervical sympathetic or of its superior ganglion causes diuresis; he considers this is brought about by provoking the secretion of the posterior lobe. Stimulation of the superior cervical ganglion produces no effect if the pituitary be first removed. Therefore, it is concluded that secreting nerves pass through this ganglion to the pituitary. Cushing also states that excision of the posterior lobe or separation of the stalk is sometimes followed by prolonged polyuria: this may be caused by irritation of portions of *pars intermedia* which remain. According to Weed, Cushing and Jacobson, puncture of the pituitary gives as definite results regarding glycosuria as Bernard's puncture of the 4th ventricle. In both cases there must be "available" glycogen present, i. e. glycogen resulting from recent ingestion of carbohydrates. Both this and Bernard's puncture are ineffective after section of the cord at the 4th thoracic level. Mental dullness has also been noticed in partially hypophysectomized animals. Most of the above symptoms have been recognized in the human subject in affections involving the pituitary and presumably also result from hypopituitarism.

Effects of Grafting and Feeding with Pituitary.

Experimental hyperpituitarism.—Many attempts have been made to increase the internal secretion of the pituitary—especially of the *pars anterior*—by grafting the organ or portions of the organ from an animal of the same species into various parts of the body—but these have always so far resulted in failure, the graft disappearing, or at any rate undergoing degeneration, in the course of a few days. In white rats, rabbits and guineapigs I have repeatedly implanted the organ as a whole or in small pieces under the skin of the groin, in the peritoneal cavity, in the kidney substance, in the spleen and in the substance of the brain, but always with no result or with only a temporary effect upon the amount of urine secreted, which has obviously been due to the autacoid of the posterior lobe. Only after extirpation of the animal's own gland did Cushing and his fellow workers succeed in occasionally getting a graft to take (for at least a month). A. Exner seems also to have obtained something like a positive result in rats without previous removal of the animal's own gland, for he states that he was able to observe a temporary increase of growth of animals in which he implanted an extra pituitary as compared with controls. Other methods which might be expected to produce hyperpituitarism consist (1) in the addition of pituitary substance to the food, (2) in the subcutaneous injection of extracts at regular intervals during a prolonged period of time. The second method has been stated by some observers to produce a retardation of growth of the skeleton and of the body generally—a result exactly the contrary to what would be expected if—as there seems no reason to doubt—the symptoms of acromegaly, presently to be described, are due to hypertrophy of the gland, especially of the anterior part. A series of experiments by the first method which were carried out by me upon white rats and extended over several months showed no constant effect in facilitating the growth of young animals—although there was no sign of retardation: the material appears, therefore, to be inert when thus administered. This absence of result may be due to chemical changes effected in the active principles of the anterior lobe by the digestive juices, or it may be that the material of the secretion of the cells of the *pars anterior* is inert whilst within the cells, and only becomes active at the moment of discharge into the bloodstream.

Clinical Evidence.

Clinical symptoms due to overgrowth or deficiency of pituitary.—The clinical symptoms due respectively to overgrowth and to deficiency are characteristic. Although these symptoms have long been recognized, some of them have only comparatively recently been properly interpreted as the result of pituitary dystrophy. This advance in knowledge has mainly been due to the experiments on animals to which allusion has already been made. The literature of the subject is rapidly becoming enormous. Every day a larger number of cases are recognized to be related to some perversion of function of this organ, and affections which were previously obscure are becoming elucidated. A large number of cases in which the pituitary probably plays a causative part have been described by Harvey Cushing in his book, "The Pituitary Body and Its Disorders," 1910, a work which must in future form the starting point for the study of this organ in its clinical aspects.

The course of many cases of disorder of the pituitary body (termed by Cushing *dyspituitarism*) is as follows: Starting with enlargement of the gland, they are heralded by symptoms of excessive function (*hyperpituitarism*). After a variable time—which may be greatly prolonged—degenerative changes in the enlarged organ supervene and there results from this a gradual diminution (*hypopituitarism*), or even eventually an entire loss of function (*apituitarism*). The primary enlargement is usually first recognized by diminution of the visual field, caused by the pressure of the enlarging gland upon the optic chiasma; hence these affections generally come first under the notice of the ophthalmic surgeon. The loss of vision may not be produced by actual destruction of nerve fibres, for it has frequently been noticed that after operation for removal of the tumour or alleviation of the pressure produced by it the patient's vision is speedily restored. Accompanying the visual symptoms or preceding them certain other signs are developed which point to the advent of a peculiar affection which is known as *acromegaly*, and, in one of its forms, as *gigantism*. The affection to which the name* *acromegaly* was given by Marie (1886) had been already described by others and its association with enlargement of the pituitary body had been recognized. But it is to Marie—associated later with Marinesco—that we owe the first complete account of the syndrome in question. The name which he bestowed upon it expresses its most prominent sign, viz: "hypertrophie singulière non-congénitale des extrémités supérieures, inférieures et céphalique"—a marked non-congenital enlargement of the limbs and head. The hands, feet and face are especially hypertrophied and X-ray photographs show a typical mushrooming of the ungual phalanges. But the enlargement is not confined to the bones of the extremities; it affects the whole skeleton, which becomes thickened and hypertrophied. There is usually a corresponding muscular development;

---

*'*ἄκρον*, extremity; *μέγας*, large.

the subject becoming abnormally strong. The affection does not supervene until adult life is attained, i. e. until the epiphysial cartilages are ossified, so that the long bones do not grow in length and the stature is but little affected, any increase of stature that is produced by increase of the vertebral column being usually more than compensated for by a kyphosis, which supervenes after the disease has made some progress. But if the hyperpituitarism commences whilst the cartilages are still unossified there is a considerable growth in length of the long bones so that the patient attains an unusual height. The affection is then known as *gigantism,* but is of essentially the same nature and origin as acromegaly (Tamburini, Woods-Hutchinson, Lannois and Roy).*

In practically all cases of both acromegaly and gigantism there is enlargement of the pituitary. This increase in bulk often takes the form of a considerable tumour, which can usually be detected during life in skiagrams of the skull, the sella turcica showing a well-marked enlargement. The tumour is usually found to affect mainly or entirely the anterior lobe, and its character is—at least at first—of the nature of a hyperplasia or adenoma (Benda), although in later stages degenerative or malignant changes may establish themselves. The tumour, if large, is, as already mentioned, liable to affect vision and to produce headache and other symptoms of intracranial pressure.

In addition to the skeletal changes others occur. The integument becomes thickened; there is increased activity of the skin glands and a tendency to an abnormal increase in the growth of the hair over the body (*hypertrichosis*). Diminution of sexual activity often supervenes early in the disease, although it may be preceded by the opposite condition. There is often glycosuria** or simple polyuria: when present these conditions are probably associated with hypertrophy of the posterior rather than of the anterior lobe. As the case advances they may be replaced by high degrees of sugar tolerance, due to a subsequent hypoplasia or degeneration of this lobe. It is interesting to note that in pregnancy also—in which the pituitary is found to undergo enlargement—glycosuria not infrequently occurs.

Marie and Marinesco were originally inclined to the view that acromegaly is due to destructive disease of the gland, since in many cases it is found *post mortem* that the tumour is of malignant character and that the substance of the gland has been destroyed.** It was this idea which led to the carrying out by various investigators of experiments for the removal or destruction of the organ in animals, in order to produce, if possible, a similar syndrome. But so far from producing increased growth, this operation led to the opposite result, the development of the skeleton and body generally being retarded and restrained. It is now recognized that the tumours of the gland which are associated with acromegaly are in the first instance of a glandular (adenomatous) type; although they may later become of a malignant or of a cystic nature and lead to the destruction of the glandular tissue. It is, therefore, held by most authorities that the characteristic symptoms of acromegaly are originally due to hyperpituitarism, i. e. to increased function (although it may be that there is also some degree of perversion of function). In later stages effects of destruction may undoubtedly become apparent and supersede the symptoms of hypertrophy.* Since no one has yet succeeded in producing the effects of hyperpituitarism experimentally, either by operation or by feeding with the gland, the evidence of their causation by excess of internal secretion is mainly founded on the clinical features of cases of enlargement of the organ.

---

*There is little question that most instances of gigantism are pathological, and it is well known that "giants" are comparatively short-lived.

**According to André Levi glycosuria occurs in 30-50% of cases of acromegaly.

Other clinical cases appear to be explicable only by supposing that there exists glandular insufficiency (*hypopituitarism*). There is, as we have seen, evidence derived from the results of partial destruction in animals as to the symptoms which may result from deficiency of secretion (p. 7). When similar symptoms occur in man it is therefore natural to conclude that they have the same cause, viz.: pituitary insufficiency; and in some cases it has been possible to obtain evidence (by skiagrams or post mortem examination) of a deficiency in size of the organ.

It must be stated that by no means every case of tumour of the pituitary is accompanied by the symptoms of acromegaly. For the disease may from the first be destructive and at once tend to the opposite condition, viz.: hypopituitarism, with its own characteristic features. This is probably what happens in the syndrome described by Fröhlich (1901) and termed by Bartels *dystrophia adiposogenitalis*. The symptoms of this affection closely simulate those of animals which have undergone partial or complete removal of the gland. One often quoted case

---

**Marie appears more recently to have modified his views; inclining on the whole to the belief that it is a perversion and not a suppression of the secretion which leads to the abnormal growth.

*Sometimes the tumour of the gland is from the first malignant, but it is stated that even then many of the cells tend to resemble those of the normal gland (malignant adenoma) and symptoms of acromegaly are still produced.

in which such symptoms made their appearance was described by Madelung in 1904 in a girl of nine years of age whose pituitary was destroyed by a bullet which lodged in the sella turcica.

The symptoms which are believed to be due to pituitary insufficiency, as might be supposed, are the reverse of those ascribed to hyperpituitarism. If the affection commence before adolescence the stature (instead of becoming gigantic as in hyperpituitarism) remains small. This is generally associated with marked adiposity, so that the weight of the body may be large relatively to the height. Sexual development is delayed and may remain largely in abeyance, producing a more or less permanent condition of sexual infantilism. In the female the menses are irregular or absent and in both sexes there is deficient development of secondary sexual characters such as the hair on the face (in the male) and over the pubes in both sexes. Such hair as occurs in this last mentioned situation in the male does not extend to the umbilicus as usual in that sex, but assumes the disposition characteristic of the female, being limited to the mons veneris. On the other hand, the hair of the head is generally abundant. Nor is the character of the trichosis the only sign of feminism in subjects affected by hypopituitarism. They show also a broad pelvis, with a certain amount of *genu valgum,* small extremities with tapering fingers, and occasionally well-marked mammary development. Skiagrams of the long bones generally exhibit persistent epiphysial lines. The skin is smooth and delicate and free from moisture. The nails are small and thin and the crescents at their base are absent.

The tendency to adiposity is attributable by Cushing to deficiency of posterior lobe secretion. This deficiency is associated with unusual tolerance to sugar and an excessive assimilative power for carbohydrates, which become transformed into fat and thus produce adiposity. These cases are, however, sometimes associated with glycosuria, although more often there is polyuria without sugar (diabetes insipidus).

The hypopituitarism may occur along with simple atrophy of the gland, as appears to be the case in the instance of infantilism described by Dr. Byrom Bramwell (Clinical Studies VI, 1908), in which the skiagram shows a small sella turcica. Or it may be caused in other ways, e. g. by the formation of a cyst partially destroying the gland, or as the result of pressure from a neighboring tumour.

A subnormal body-temperature is generally associated with the above symptoms as well as low arterial tension and a slow pulse; there is also usually drowsiness and torpidity.* The excretion of carbon dioxide was found by Benedict and Homans to be markedly decreased. Sometimes evidences of psychic derangements and occasionally a tendency to epilepsy have been described.

---

*Most of these symptoms are, as pointed out by Cushing, somewhat similar to those exhibited by hibernating animals.

When the hypopituitarism comes on after adolescence certain of the above symptoms will be missed, but the lowered temperature, the tolerance to sugar and the supervention of excessive adiposity are generally present, as well as the dryness of the skin and loss of hair, and a tendency in the male to adopt the feminine type of trichosis, even in cases where the male type has already been established. According to Cushing, "pigmentation of the skin is a conspicuous feature of many of the adult states, and as it is apt to be associated with asthenia or a low blood-pressure it is natural to ascribe it to an associated adrenal insufficiency, though it hardly reaches the degree of bronzing seen in some of the Addisonian examples of adrenal tuberculosis."

As has already been stated, the history of some cases of affections of the pituitary shows symptoms characterizing hypopituitarism following those characteristic of hyperpituitarism, although of course little or no retrogression in the growth of the skeleton and body can generally be expected. Thus the occurrence of hyperplasia and hyperpituitarism during adolescence leading to a general overgrowth of the body and unusual growth of hair, and sometimes accompanied by sexual precocity, may be followed by glandular hypoplasia and diminution of the sexual instinct, with or without impotence, as well as by excessive adiposity, and the assumption by the male of some of the feminine characteristics which have been above described as associated with hypopituitarism. This alteration in the signs of disease complicates the clinical features of many cases; the complications can only be unravelled by a careful study of the history of each case.

In many instances where the affection begins with hyperplasia of the gland and subsequent changes produce destruction or degeneration of the enlarged organ, leading eventually to apituitarism, these changes may occupy years in their development, but the patient ultimately loses strength and gradually wastes. Under such circumstances death results from a state which is probably analogous to the *cachexia hypophyseopriva* described by Paulesco, Cushing and Biedl in the animals operated on by them. It seems likely that this is the usual course of the disease known as acromegaly, of which it is still uncertain regarding some of the symptoms whether they are to be regarded as associated with hyper- or hypopituitarism. That the acromegalic skeletal growth is produced by hypertrophy and oversecretion (or perverted secretion) of the anterior lobe is highly probable, both as the result of partial extirpation in animals and from the effect of operative removal of pituitary tumours in man. One case in particular is described by Hochenegg (1908) as having shown within a few days of operation for removal remarkable amelioration of the symptoms, with gradual diminution in size of the enlarged extremities, and eventually complete cure. The thyroid gland both in this and in another instance which was also successfully operated upon by the same surgeon became permanently enlarged. In both the tumour was a malignant adenoma. In other cases operated on by Hochenegg, Cushing and others, in some of which an enlarged anterior lobe only was removed, although the results have for the most part been less striking than in the above examples, the retrogression of the disease symptoms resulting from the partial extirpation of the tumour and especially of its anterior lobe was distinct and apparently permanent.

We are therefore doubtless warranted in believing that the enlargement of the skeleton and the other signs which are characteristic of acromegaly are due to hypertrophy of the anterior lobe of the pituitary, whilst hypertrophy of the posterior lobe produces totally different effects on metabolism. Further, the symptoms due to hypopituitarism vary according as the anterior or the posterior lobe of the gland is mainly affected. In the former case the chief effect seems to be upon the stature. When, however, it is the posterior lobe which is affected, a tendency to fat formation and to deficient sexual development are usually manifested, without being necessarily accompanied by diminution in stature; indeed, they may be associated with increased growth of the body, although not especially affecting the skeleton, and a characteristic infantile condition is retained. Rarely these symptoms of deficiency of posterior lobe occur along with acromegalic symptoms, and are then associated with concomitant enlargement of anterior lobe. That the adiposity is related to a deficiency of the posterior lobe is further indicated by the fact, according to Strada, that it is never accompanied by glycosuria or polyuria, symptoms which are almost certainly the result of increase of activity of that lobe.

In connexion with the influence of the anterior part of the organ on growth, cases of dwarfs have been described in which the pituitary has been noticeably small and atrophied; although on the other hand others have been recorded in which the contrary condition has been found. The supposition that in these latter cases the enlargement is not a true glandular growth as in acromegaly, but of an abnormal or destructive character, is attractive. We must, however, be careful not to adopt it too readily simply because it seems to fit in with what is known of the effect of overgrowth of the organ in producing giants and acromegalics.

But in more than one such case of a dwarf with enlargement of pituitary the tumour has been found to be really outside the gland and to exercise compression upon it. It must be remembered also that increased activity of the natural function of an organ may not necessarily accompany increase in volume: this is exemplified in cases of endemic goitre. There is on the whole, therefore, reason to believe that a dwarfish habit of body is associated with diminution either in size or in activity of the anterior lobe of the pituitary. These changes may commence in infancy or even in the foetus.

Assuming that the two parts of the gland have different functions—the anterior furnishing autacoids which govern the growth of the skeleton and body generally, the posterior, autacoids which affect carbohydrate metabolism, fat formation, and the development of the sex glands as well as stimulate involtary muscle, and certain secretions, especially those of the kidneys and mammary gland, it is obvious that as the result of increase or diminution of volume and function of either part the clinical symptoms manifested in affections in which this organ is involved may take very different characters. Thus we may have symptoms resulting from (1) (2) general hyperpituitarism or hypopituitarism involving both anterior and posterior lobes, (3) (4) anterior hyperpituitarism or hypopituitarism involving the anteroir lobe alone, (5) (6) posterior hyper- or hypopituitarism involving the posterior lobe alone, (7) anterior hyperpituitarism combined with posterior hypopituitarism, and (8) anterior hypopituitarism combined with posterior hyperpituitarism. In all of these eight conditions the clinical appearances would be different.

RELATIONS OF THE PITUITARY TO OTHER GLANDULAR ORGANS.

The relationship of the pituitary to other glands is more extensive than that of any of the other internally secreting organs. Ascoli and Legnani found, in dogs which survived for a sufficient time the operation of removal of pituitary, a diminution in volume of the spleen, with disappearance of the Malphigian corpuscles, precocious retrogression of the thymus, enlargement of the thyroid due to accumulation of colloid within its follicles similar to that seen in endemic goitre, and an increase of lipoids in the cells of the cortex of the suprarenals.

Relative to the adrenals.—That there is some relationship between the autacoids of the pituitary and of the medulla of the suprarenal capsule would appear from the fact that that of the posterior lobe of the pituitary and that of the suprarenal medulla mutually facilitate one another's action, especially upon the bloodvessels. Thus an immediately prior injection of even a small dose of adrenine will increase the effect of a dose of pituitarine and *vice versa.*

There is also some evidence to show that an excess of adrenine may be secreted into the blood as the result of excitation of the suprarenal medulla by extracts of the posterior lobe of the pituitary.

Relation of pituitary to the sexual glands.—The relationship of the pituitary to the sexual glands and secondary sexual characters has been dealt with in considering the symptoms associated with hypo- and hyperpituitarism, and besides the effect of these conditions on the state of development of the sexual organs, the latter appear to have some reciprocal effect on the pituitary. Thus several observers have found enlargement of the gland and increase in the number of oxyphil cells of the *pars anterior* to occur as the result of castration; although Biedl and Fichera and Zacher describe the enlargement in the rat as being produced by the appearance of large bladder-like cells, which have not oxyphil granules. Livingston, who has recently made experiments on this subject in rabbits, finds that the effect which is produced is greater in females than in males, being practically negligible in the latter. Steinach and Scheidt state that the changes in the pituitary which would result from castration are prevented by implantation of either ovary or testis in the castrated animal and since the generative cells of the implanted organs undergo atrophy they ascribe the result to the interstitial cells. Moreover, it is found that the conditions of menstruation and pregnancy are associated with hypertrophy of the gland. Indeed, as the result of pregnancy it may attain to twice or three times its normal weight.

CHANGES IN THE PITUITARY AS THE RESULT OF THYROIDECTOMY.

Relation to the thyroid.—That after the removal of the thyroid the pituitary body becomes markedly altered and enlarged was first shown by Rogowitsch in 1886. His statements have been abundantly confirmed by other observers.* The hypertrophy affects all parts, but most the *pars anterior,* in which it is not uncommon to observe a development of colloid-containing vesicles not unlike those of the thyroid: the same appearance is seen in cases of myxoedema and others involving pathological changes in the thyroid in the human subject (Boyce and Beadles and others). But the pituitary colloid is not identical with that of the thyroid. It is noteworthy that it does not contain iodine, which is a characteristic component of the thyroidal colloid in all animals. Even many months after thyroid removal Sutherland Simpson and Andrew Hunter were unable to detect the least trace of iodine in the sheep's pituitary. Nor can the pituitary take the place of the thyroid in animals affected with cachexia thyreopriva. There is, therefore, no clear evidence that these two organs act vicariously: the effect of the injection of their extracts is, moreover, entirely different. But that they have a certain similarity of function in relation to growth and development is shown by the results of their removal in young animals. In both cases growth is slowed or arrested, the development of the body generally and of the sexual organs in particular is checked and that of the higher functions of the nervous system is interfered with. There is also a tendency to adiposity, which is particularly marked in cases of hypophysial deprivation, but is also seen after thyroidectomy and in myxoedema.

---

*A. E. Livingston has found that thyroid feeding prevents the increase in size of the pituitary which would be caused by thyroidectomy. Halpenny and Thompson obtained enlargement and other changes of the pituitary as the result of parathyroidectomy alone.

Another striking effect of thyroidectomy upon the pituitary is increase of hyaline and granular masses in the *pars intermedia* and their passage in large numbers through the *pars nervosa* into the infundibular extension of the third ventricle (Herring). This denotes an increased activity of the *pars intermedia.* Whether the phenomenon also occurs in cases of myxoedema has not been noted, but it will probably be found to be the case.

Relation of the pituitary to organs concerned with carbohydrate metabolism.—Hypopituitarism, whether the result of disease or of surgical interference, is associated with an increased tolerance for sugar. This function is, as we have seen, connected with the posterior lobe. According to Cushing, animals which have suffered deprivation of this lobe will even bear removal of the pancreas without exhibiting glycosuria. But the result of removing the pancreas in causing glycosuria is produced through the liver, the glycogen of which becomes converted into sugar. And an effect similar to removal of the pancreas is produced by excess of adrenine in the blood or by swabbing the exposed pancreas with adrenine solution.

Cushing states that after removal of the pancreas the amount of hyaline substance of the *pars intermedia* and *pars nervosa* is increased. All this seems to show that there exists a close functional correlation between these four organs—pituitary, suprarenal, pancreas, and liver, and that disturbance of the function of one of them may affect the metabolism of carbohydrates through its influence upon others. And to these we may add the thyroid, since, as has already been noticed, the mechanism of carbohydrate metabolism is also affected, in some manner as yet imperfectly understood, by a condition of hypothyroidism, which, like hypopituitarism, raises the assimilation limit for sugar in the body; and on the other hand, as the experiments of Asher and Flack have shown, the presence of an unusual amount of thyroid secretion in the blood acts as an excitant to the suprarenals so that an increased outpouring of adrenine is caused, and this produces a lowering of the sugar assimilation limit.

It is, however, upon two of the externally secreting glands that the most obvious effect of the autacoid or autacoids derived from the posterior lobe of the pituitary is exhibited. These are the kidney and the mammary gland. The effect on the kidney is a specific one and may be here more fully alluded to.

Effect of pituitary autacoid upon the kidney.—If the blood-pressure of an animal is measured in the usual way by a manometer and at the same time the volume of the kidney and the rate of urine flow are recorded, it is found that on injecting extract of the posterior lobe or an aqueous solution of its autacoids into a vein, whilst the normal rise of blood-pressure is obtained owing to a general constriction of the arterioles of the body, this constriction is not shared—or only for a very brief interval*—by the kidney, but is here replaced by a dilatation which shows itself by expansion of the organ enclosed in an oncometer. Accompanying this expansion, a remarkable increase in the amount of urine is observed; or if, as often happens after such operation in an anaesthized animal, there is no urine being secreted before the administration of the autacoid, the flow speedily begins, and continues at a rapid although a slowly diminished rate, for a prolonged period of time. It might at first be supposed that the increase of urine is simply determined by the great increase of blood-flow through the organ consequent upon the general vaso-constriction and the local vaso-dilatation which pituitary extract produces. But it may be seen that increased rate of flow is still maintained after the blood-pressure has come back to the level at which it stood before the injection. Moreover, the effect of a second and subequent doses of the autacoid administered soon after the main result of the first dose has passed off again produce an increase in the urine flow, although the blood-pressure as the result of these after-doses does not rise, or even falls instead of rising, and although the kidney volume may now be unaffected. This experiment clearly demonstrates that the autacoid may affect not only the bloodvessels of the organ, but also its secreting cells, which it renders more active (or more permeable). The secretion must therefore in these circumstances be induced by a direct chemical excitation of the renal cells by the autacoid, which thus bears the same relation to the kidneys as is borne by the secretine of the duodenum to the pancreas. In this respect also the action of the autacoid of the pituitary is comparable to that of those drugs which act as specific diuretics upon the secreting cells of the kidney, as distinguished from those which produce diuresis by increasing the water content of the blood or by merely increasing the general blood-pressure. The question arises whether we have to do here with the action of a single autacoid which acts on the one hand as a chalone upon the bloodvessels of the organ producing their dilatation, and on the other as a hormone upon the secreting cells stimulating them to increased activity, or whether two separate autacoids are concerned, one of which affects the bloodvessels and the other the cells of the organ. The latter view was taken by Herring and myself, but has been combated by Dale, who adduces other examples of the action of drugs and extracts in which the same active substance may produce a double result, one part of which may fail to show itself. If Dale's contention is correct we are, so far as the action upon the kidney and its vessels is concerned, dealing with a single autacoid capable of acting either upon both tissues, viz., bloodvessels and secreting cells, or upon one only. When its action is produced upon one only this may then be interpreted to mean that the other is temporarily insensitive to its action: for example, in the case of the action of pituitary autacoid upon the kidney one may sometimes observe that the diuretic action (upon the cells) fails to be produced whilst the vascular effects are pronounced. But even if this were correct for the kidney, it need not commit us to the conclusion that pituitary extract contains only one autacoid. For there is reason to think that a distinct autacoid affects the secretion of milk; and the fall of blood-pressure produced by a second dose of pituitary extract (see p. 58) is probably due to another; and quite possibly the effects upon the uterus to a third. Baya and Peter have also given evidence for the belief that there are two autacoids which act upon the intestinal muscle, one producing inhibition and the other contraction: they state that they are separable by alcohol.

---

*During this preliminary period the flow of urine may be temporarily diminished or arrested.

The diuretic action of the pituitary autacoid is not antagonized by atropine. This may be taken to be a sign that it does not act through nerves or nerve-endings, but directly upon the kidney cells;* in this respect it resembles the action of secretine upon the pancreas.

Effect of extract of posterior lobe of pituitary upon the mammary gland.—It was shown by Ott and Scott that in the goat an injection of this extract into a vein greatly increases the quantity of milk which can be drawn from the udder in a given time after the injection, as compared with that which could be obtained in a similar period immediately before. This galactagogue action of pituitary extract was confirmed by experiments upon lactating cats by Mackenzie and myself. The method we employed consisted in canalizing or incising the nipple of one or two of the mammae so as to allow any milk which was secreted to run out. This was conducted to the side and registered by allowing it to fall upon an electrical drop recorder. This *modus operandi* permits the conditions of the experiment to be readily controlled and the results to be accurately registered. It can thus be shown that even a very minute dose of a pituitary autacoid—whether the same as that which affects the bloodvessels and produces increased secretion of urine cannot certainly be said—will cause milk which has accumulated in the gland to be immediately poured out, whilst a somewhat larger dose will produce complete emptying of the alveoli. If the nipple be not canalized or incised, the resistance which is afforded in the passage through its ducts, controlled as they are by the plain muscle tissue which abounds in the nipple, does not permit of this emptying and no actual outpouring of the secretion takes place. If an intramuscular injection of pituitary extract is made in the arm of a nursing woman, a feeling of tingling is felt in the mamma and a sensation of milk flowing towards the nipple is experienced like that which occurs when the child is put to the breast, but there is no actual outpouring of the secretion.

---

*It is usually held that the renal secretion is independent of a direct influence of nerves upon the secreting cells—thus differing from ordinary secreting glands, such as the salivary glands. But Asher has recently adduced evidence which appears to indicate that influences passing down the vagus nerve may affect the quantity of urine secreted by the homolateral kidney.

If in the experiment upon the cat the animal be killed immediately after one of its glands (with nipple incised) has been emptied by an intravenous injection of extract of posterior lobe in the manner above described, and if a portion of tissue comprising parts of two adjacent mammae—one emptied of its secretion as the result of the injection, the other with its alveoli still full of milk—be fixed and sections made passing through both full and empty mammae, the contrast in appearance is remarkable. In the one, where the alveoli are distended with secretion, they are large and rounded and the lining cells are flattened against the limiting membrane, whilst in the other from which the secretion has been discharged the alveoli are irregular, shrunk and empty and their cells are folded, and the lining cells stand prominently out from the limiting membrane.

If after a first full dose of pituitary extract has been given a second dose succeed it at a short interval, no further flow of secretion from the exhausted mamma can be produced. The effect of the autacoid, therefore, is not—at any rate immediately—to cause the cells to form and secrete milk, but only to cause the alveoli to empty themselves of the milk which has been previously formed and secreted within them. The simplest manner in which one can conceive this to occur is by contraction of (plain) muscular tissue around the alevoli. In support of this opinion I have lately succeeded in observing in the well of the mammary alveolus in the cat long rod shaped nuclei immediately external to the epithelium. These nuclei exactly resemble those of involuntary muscle-cells and I have no doubt that they belong to a thin muscular layer which, like the muscular tissue of the sweat-glands, is probably situated between the basement membrane and the epithelium of the alveoli.

The action of pituitary extract upon milk secretion differs from its effect upon the secretion of urine in the fact that in the last named case there is an actual stimulation of the renal cells to abstract fluid from the blood, and not a mere contraction of alveoli and outpouring of previously secreted fluid.

Apart from the pouring out of the contents of the alveoli—or rather the tendency of the alveoli to empty themselves towards the nipple—which is excited by the pituitary galactagogue, there is but little tendency to cause an increased production of milk. This at least is the result which was obtained in cows by Gavin. Later observers (Hammond and Sutherland Simpson) have obtained a slight increase in the diurnal yield of both goats and cows and also a slightly increased amount of fat in the milk produced under the influence of the autacoid.

Mackenzie found that in the cat atropine does not arrest the flow of milk obtained as the result of pituitary injection (an observation which has been confirmed for the cow by Houssay). He obtained, however, an inhibitory action from extracts of placenta, which, when injected into a vein just previously to the injection of pituitary extract, prevented the effect of the latter from influencing the mammary gland. It is reasonable to conclude from this that placenta extract must contain a chalonic autacoid which restrains the outpouring of the secretion of the mamma and antagonizes the harmonic action of the pituitary autacoid.

The mamma is much more sensitive to the action of pituitary extract than are other organs (except perhaps the uterus) and an outflow of milk can be obtained with a dose which produces no appreciable effect on the blood-pressure or kidney. This is well illustrated by an experiment by Herring with the skate's pituitary. In this no effect was shown on the blood-pressure or kidney, but there was abundant outflow of milk. Or it may be that the effect is due to a special hormone and that the one which influences blood-pressure and kidney secretion is absent in the skate's pituitary. The blood of non-lactating animals sometimes contains enough of the galactagogue autacoid to provoke the mammary secretion of a lactating animal, although the other effects of pituitary autacoid are unseen. Thus in one experiment 5 c. c. of the blood-serum of a guineapig was injected into a lactating cat and provoked a marked secretion from a mamma the nipple of which had been incised, although no effect on the blood-pressure was obtained.

Galactagogue autacoids are also contained in extracts of other organs than the pituitary, viz: the corpus luteum of the ovary, the involuting mucous membrane of the uterus after parturition, the lactating mammary gland itself, and to a slight extent from the pineal gland. Their effect on the mamma is exactly like that of the pituitary galactagogue, but the effects on blood-pressure are either nil or are different from that of pituitary extract. It is possible that in all these cases the galactagogue autacoid is the same as that obtainable from the pituitary.

The effect of galactagogue extracts in causing secretion from the gland is accompanied by a change in the electric potential of the organ so that the alveoli tend to become negative to the duct. This change is somewhat similar to that which is produced in the submaxillary gland as the result of exciting the chorda tympani.

From what has been stated regarding the mammary gland, it is obvious that this is an organ which is singularly under the influence of autacoids circulating in the blood. It is, moreover, well known that its secretion is not directly under the influence of nerves. Excitation of its nerves is not found to produce any effect on the secretion—which, moreover, continues normal after all nerves are cut (Eckard) and even from a gland which has been transplanted to a totally different situation (Ribbert). Moreover, the case of the pyophagus twins, Rosa-Josepha Blazék, who are united by a common sacrum, with anus and vulva in common but with two uteri and vaginae, is particularly interesting in connection with this question. For when one of the twins became pregnant the mammary gland in both underwent hypertrophy and eventually secreted milk. The well-known effects of nervous conditions (emotions and the like) upon milk secretion must therefore be produced through the internal secretions of organs such as the pituitary. That emotions may act in this way is shown by the experiments of Cannon (already referred to), who determined an increase of adrenine in the blood of a cat which had been excited by the presence of a strange dog.

LECTURE V.

THE INTERNAL SECRETIONS OF THE PINEAL GLAND, OF THE ALIMENTARY MUCOUS MEMBRANE, OF THE PANCREAS, AND OF THE SEXUAL ORGANS.

The internal secretion of the pineal gland.—The *pineal gland* or *epiphysis cerebri (conarium),* which is present in nearly all vertebrates, is in man a small solid organ less than half the size of the pituitary body. It projects from the roof or dorsal wall of the third ventricle and is connected on either side by a short stalk or peduncle to the habenular commissure. The base of the gland has a small infundibular depression *(pineal recess)* leading from the ventricle just above the entrance of the aqueduct. This recess is the remains of the evagination from the third ventricle, from which the pineal was originally developed. The gland is somewhat larger in the child than in the adult, and in the female than in the male. Its average weight is given as 0.22 grm. in man. It lies back between the anterior pair of corpora quadrigemina, and is closely invested by pia mater, usually becoming detached from the brain when the pia mater is torn away.

Structure.—Sections of the pineal show it to be composed of epithelium-like cells arranged in irregularly disposed trabeculæ with connective tissue between. In some animals plain muscular tissue has been described in the intertrabecular tissue. The bloodvessels are very numerous. There are no true nervous elements, with the exception of a few fibres apparently destined for the bloodvessels, but neuroglia cells are present in the septa and are said to increase in number with age. Embedded in the interstitial tissue and in the covering of the pia mater are small round globules of calcareous matter—*corpora amylacea, brain sand*—which are much more common in man than in other animals and more numerous in the adult than in the child. The cells of the organ are not everywhere uniform in character. Most of them have a large oval nucleus and a variable number of fine oxyphil granules in their protoplasm, but some possess basophil granules. Comparatively large oxyphil granules such as are seen in the anterior part of the pituitary are not found in the pineal, which otherwise is not very dissimilar in general appearance to that portion of the pituitary in structure, although less vascular. Vesicles containing "colloid" are not present, but cysts are not infrequent: these may be due to pathological changes. The gland undergoes retrogressive changes after puberty: these take the form of hypertrophy of the intertrabecular tissue with diminution in the amount of epithelial tissue: nevertheless this last remains present to some extent throughout life.

Ott and Scott found that the result of intravenous injection of extract of pineal is to produce a fall of blood-pressure followed by a prolonged rise with dilatation of kidney volume and diuresis. They obtained some increase of contraction of the uterus. They state that dilatation of the pupil is produced on dropping the extract into the eye of an animal in which the superior arterial ganglion had been extirpated. They further noticed that the extract has a slight galactagogue action. All these effects are similar to those produced by pituitary extract. The galactagogue action described has been since confirmed by Mackenzie, but Dixon and Halliburton obtained no result so far as arterial pressure and kidney secretion is concerned, apart from a slight fall of blood-pressure, which was almost entirely non-specific. My own experiments have yielded negative results in these particulars and those of Jordan and Eyster were also negative.

Extirpation of the pineal is a difficult operation to carry through without provoking severe hæmorrhage, to which the animals operated on have generally succumbed. The most complete series of experiments as yet made are those of Foà on the domestic fowl. In pullets in which the pineal gland was destroyed no difference could be noted on comparison with controls, but in cockerels Foà describes not only a more rapid growth of body but an earlier development of the testicles and of the secondary sexual characters.

The accounts of the results of castration on the pineal have been conflicting. Those of Sarteschi on male animals of several different species proved negative: whereas Biach and Huller describe in cats, both male and female, the production of an atrophied condition of the pineal as the result of the removal of the generative glands. In connexion with this it is interesting to notice that Schüller and other clinical observers have described abnormal growth of the skeleton and sexual precocity, with early development of secondary sexual characters, in young boys, before the seventh year, in whom tumour of the pineal—generally of the nature of a teratoma—has been discovered *post mortem.* In some of the cases in which secondary sexual characters were present the testicles had remained small, but there was an unusually large amount of the interstitial tissue. The symptoms have been ascribed to a diminution of function of the pineal. Another condition which has been frequently noted as accompanying pineal tumours is unusual adiposity, of a somewhat similar nature to that accompanying hypopituitarism, but not as a rule associated with deficient development of the generative organs. It has been suggested that this may be caused by a condition of hyperpinealism. But it must be admitted that both clinical observations on the subject and experimental observations in animals are at present too fragmentary to enable us to decide with any precision regarding the functions of this organ or the nature and action of its autacoids.

Internal secretions of the mucous membrane of the alimentary canal.—Bayliss and Starling discovered in 1902 that an extract of the duodenal mucous membrane or even of its epithelium alone, if injected into the circulating blood, produces a secretion of pancreatic juice and, to a less marked degree, of bile. In Bayliss and Starling's experiments the active substance or autacoid was obtained by boiling the mucous membrane with dilute hydrochloric acid and afterwards neutralizing and filtering: the autacoid is contained in the filtrate. They observed little or no activity from extracts of membrane which had not been treated with acid, and concluded that the hormone (*secretine*) is present in the cells in an inactive form (*pro-secretine*) and becomes activated (converted into secretine) by the action of the acid. It had been previously found that rinsing the duodenum with dilute mineral acid* would provoke secretion of pancreatic juice. This had been put down to a reflex effect through nerves and nerve-centers, but the experiments of Bayliss and Starling make it clear that the effect is due to the formation and absorption into the blood of an organic chemical agent of a fairly simple constitution—being dialyzable and not destroyed by boiling.

That there is mutual interaction between pancreas and duodenum would appear from the observations of Evans, who found that pro-secretine disappears from the duodenum after complete extirpation of pancreas, but not if enough pancreas be left to prevent the occurrence of glycosuria.

In 1906 Edkins announced that a substance of similar nature to secretine but acting upon the glands of the stomach can be extracted from the pyloric mucous membrane by boiling water or dilute hydrochloris acid, or with dextrose, maltose or albumose.** Extracts of the mucous membrane of the fundus do not yield a similar hormone.

Atropine, which in small doses acts through the nerve-endings of secreting organs, does not inhibit the action of these secretines and, as we have seen, neither does it inhibit the action of the galactagogue autacoids. Their activity is, therefore, probably manifested directly upon the cells of the organ they stimulate and not through the nerve terminations.

The internal secretion of the pancreas.—The pancreas contains, besides its alveoli and the ducts which conduct their secretion into the duodenum, a peculiar epithelial tissue occurring in most animals in the form of small isolated masses interspersed throughout the gland, and known from their discoverer (1869) as the *islets of Langerhans*. Although quite distinct in appearance and in the characters of their cells from the epithelium of the alveoli, the study of their development shows that they originally grew out from the budding ducts and that their cells have therefore an origin in common with those of the alveoli. But they have no open communication with the ducts or alveoli. The number of islets in the pancreas is very variable, and this variability has led to inferences being drawn regarding their appearance and disappearance, which in many cases are probably not justifiable. Thus Bensley found a variation in the guineapig in animals of different ages of from 10 to 189 islets per milligramme of pancreas: in the mature animal the variation was from 10 to 25. The enumerations of Clerk led him to the conclusion that in the normal human pancreas there may be as many as 10 to 20 islets in each milligramme of the gland, which roughly would give about three-quarters of a million to a million and a half for the whole pancreas.

---

*According to Babkin and Ishikawa, fatty acids introduced into the duodenum have a similar effect.

**Albumose has been found by Gley also to activate the pro-secretine of the duodenum.

In Teleostean fishes Rennie has shown that there is one very large mass of islet tissue which is encapsuled by connective tissue and practically forms a separate organ. But in other animals the islets are closely encircled by and in contact with the alveolar tissue and sometimes appear to be contined into it. According to Pensa, they have an especially abundant nerve supply. Each islet has a specialized blood-supply in the form of a network of irregular shaped "sinusoidal" capillaries which are both larger and relatively more numerous than the capillaries of the alveoli (Kühne and Lea).

The cells of the islets are generally much less stained by the ordinary dyes used in histology than are those of the alveoli. They are therefore usually described as chromophobe. But they have an especial affinity, as Bensley has shown, for neutral red and janus green, employed as intravital stains. Although they contain granules, these are much finer than the zymogen granules of the alveolar cells. According to Lane, there are two kinds of cells in the islets, distinguishable from one another by the nature of their granules. The cells come into very close relation—indeed, in actual contact—with the walls of the blood capillaries. If the duct of the pancreas be tied, the ordinary alveolar tissue, after a time, disappears, although for a long while after there are the remains of the chief ducts passing through the organ, but most observers are agreed that the islet tissue does not—at least to any great degree—participate in the atrophy of the alveoli, and the statement that its persistence under these circumstances—although denied by some—is generally accepted, although it must be admitted that in the altered and cirrhosed tissue of the gland it is not easy to recognize the distinctive features of the islet-cells.

Since the discovery in 1889 by v. Mering and Minkowski, that the removal of the pancreas, or even of the greater part of the organ, is immediately followed by hyperglycæmia leading to severe and fatal diabetes, whereas this effect is not obtained from mere ligature of the duct (in spite of the disappearance of all the alveolar tissue and the complete cessation of formation of pancreatic juice), attention has been especially directed to the islet-tissue as the probable source of an internal secretion which serves to regulate carbohydrate metabolism. For, as has just been stated, the cirrhosed and atrophied gland which remains after ligature of the duct contains none of the ordinary secreting epithelium, except perhaps that of a few remaining ducts, but does, in all probability, still contain the islets of Langerhans. Nevertheless this atrophied gland is sufficient to furnish the autacoid which regulates carbohydrate metabolism, which is by it maintained normal for an indefinite time. But if now the atrophied gland is removed, diabetes at once shows itself. Further, if a portion of pancreas—whether thus atrophied or not—be successfully transplanted to another site and the rest of the gland be then removed, diabetes does not occur—although, on removal of the graft, it immediately makes its appearance. The evidence for the action of an internal secretion which is yielded by the gland—and in all probability by the islet-tissue—which serves to maintain carbohydrate metabolism in a normal condition is therefore very complete. In support of this conclusion it has frequently been noted in cases of diabetes in man that the cells of the islets have undergone some kind of degenerative change.

Regarding diabetes resulting from experimental removal of the pancreas, it may be remarked in the first place that if the removal is complete the percentage of sugar in the urine is very large, even during fasting or on carbohydrate free diet. Minkowski found the relation of dextrose to nitrogen in the dog under these circumstances to be 2.8 :1. With protein diet the sugar rises (and falls) with the nitrogen: with fatty foods there is an increase in the quotient: carbohydrates of the food are almost wholly passed out by the urine as dextrose. Laevulose is, however, to a great extent utilized in the body and the glycogen which had disappeared from the liver and muscles may to some extent reappear when this sugar is given with the food.

The glycosuria is accompanied by hyperglycæmia, which is indeed the actual cause of the glycosuria; but according to de Meyer it is augmented by the fact that the permeability of the kidneys to blood-sugar seems also to be somewhat increased by absence of the pancreas. The hyperglycæmia is produced in the first instance by transformation of the liver glycogen into sugar, which is passed into the blood; while the glycogen of the muscles is also diminished.* The sugar thus produced from the liver glycogen is not utilized in the body, but is for the most part at once got rid of by the kidneys.** Since, therefore, the carbohydrates of the food are not used for nutrition, there is a comparatively greater call upon the proteins and fats both of the food and of the body, so that the animal loses flesh rapidly and death may ultimately result from inanition, unless the end has arrived sooner as the result of the accumulation in the body of abnormal byeproducts of the metabolism of proteins and fats (such as the acetone-bodies) tending to acidosis and the production of diabetic coma.

The results of pancreas-extirpation and pancreas-grafting can, as we have seen, be best explained by supposing that the islet-tissue produces an autacoid substance which passes into the blood and affects carbohydrate metabolism and carbohydrate storage in such a manner that there is no undue accumulation of glucose in the blood. Provisionally it will be convenient for descriptive purposes to refer to this hypothetical autacoid as *insuline.* It must, however, be stated that it has yet to be determined whether the active substance is present as such in the pancreas or whether it exists there as *pro-insuline,* which becomes elsewhere converted into the active autacoid. It is not found that pancreas extracts have the effect of antagonizing the results of pancreas extirpation: in this respect they offer a parallel to the negative results of suprarenal extracts in antagonizing the effects of adrenal deprivation. On the other hand, it has been shown by Hédon and by Forschbach that the blood of a normal dog contains substances which when allowed to circulate through the system of a depancreatized dog prevent the occurrence of glycosuria. It has also been shown by Carlson and Drennan that if a pregnant bitch be deprived of the pancreas she does not suffer from glycosuria as long as her fœtuses remain *in utero.* This experiment proves that the autacoids produced by the fœtal pancreas can pass to the maternal circulation through the placenta; and both experiments afford a clear indication that the influence of the pancreas upon carbohydrate metabolism is due to a chemical agent circulating in the blood. Later experiments of Hédon seem to show that the autacoid is inactive whilst within the pancreatic vein, and only becomes activated on passing through the liver.

---

*Ehrlich found the glycogen of the blood-leucocytes to be markedly increased in amount in pancreatic diabetes.

**Kausch, and independently Noël Paton, have shown that removal of the pancreas in birds does not as a rule cause glycosuria, although glycosuria may be present. On administering adrenine, glycosuria is at once produced.

There are various ways in which the prevention of an undue accumulation and mobilization of glucose and the consequent appearance of hyperglycæmia might be supposed to be effected by an internal secretion of the pancreas islets:

(1) The active agent may itself be a glycolytic ferment (Lépine) and may be the source of the glycolytic ferment which is known to be present in blood. If so, removal or disease of pancreas would tend to produce glycosuria in consequence of the absence of sufficient of this ferment to effect the splitting of glucose, so that the sugar of the body would not be metabolized further and would be passed out as such by the urine. As against this theory it is found that in diabetes the glycolytic power of the blood is not diminished, and although in support of it the fact has been urged that a glycolytic ferment can be got from the pancreas it must be pointed out that this is by no means peculiar to that organ, for a similar enzyme is yielded by most organs and tissues of the body.

(2) It may be of the nature of a kinase, the function of which is to convert a pro-ferment into ferment or perhaps to promote the activity of an already existing ferment which serves to break down the molecule of glucose and prepare it for ultimate oxidation in the muscles, liver, etc. In support of this hypothesis it is stated by O. Cohnheim that a combination of muscle juice with pancreas juice (obtained from the cells by hydraulic pressure) is far more active glycolytically than either of the two employed singly; although, as Levene points out, the disappearance of sugar which is caused cannot be definitely regarded as glycolysis. According to de Meyer, a glycolytic pro-ferment which is activated by insuline is contained in the blood-leucocytes. Anything which tends to prevent the formation of insuline, such as disease of the islet-tissue (and perhaps the entire removal of the pancreas), the action of adrenine would therefore necessarily interfere with the glycolysis and prevent the utilization of glucose by the tissues, so that hyperglycæmia and glycosuria would be produced. According to this theory, the tissues of a depancreatized dog should be unable or less able to utilize glucose for the production of muscular work. Experiments on heart muscle which seemed to support this have been published by Knowlton and Starling. But other experiments by Porges and Salomon (on skeletal muscle) gave a contrary result, and Starling has since come to the conclusion that his results with Knowlton were within the limits of individual variations of the normal heart muscle.

(3) The substance (insuline) produced by the pancreas islets may be a chalonic autacoid which tends to inhibit the formation of glucose from glycogen, and incidentally to promote the storage of glycogen, so that in its absence the glycogen which is present in the liver is rapidly converted into glucose and the sugar absorbed from the alimentary canal or found in the body is not stored by the liver. The result again will be hyperglycæmia and glycosuria. The fact that the conversion of glycogen into glucose occurs rapidly in the excised liver seems to indicate that there is something which under ordinary circumstances acts as an inhibitory agent, and we may well suppose this to be yielded to the blood by the pancreas.

The hypothesis that there exists a chalonic or inhibitory agent in the internal secretion of the pancreas which affects carbohydrate metabolism is probably the correct one; but whether this is of the nature of an autacoid or of an enzyme cannot be definitely stated, although the supposition that it is an autacoid is most in accordance with what is known regarding the effective agents of other internal secretions.

Relation of internal secretion of pancreas to other endocrine agents.—Hyperglycœmia is produced not only by extirpation of the pancreas but also by Bernard's ring or puncture of the medulla oblongata, by stimulation of the splanchnics, and by the introduction of an excess of adrenine into the blood. That the last named acts in part at least by inhibiting the internal secretion of the pancreas is suggested by the result of its local application, but there is no doubt that its main action is on the twin cells or on their sympathetic endsubstance. In fasting animals adrenine causes disappearance of glycogen from the liver and eventually from the muscles. Repeated doses in the rabbit, although producing further glycosuria, may, singular to relate, be accompanied by a storage of glycogen in the liver. Since this condition is accompanied by increase of nitrogen in the urine, it seems certain that the carbohydrate has now been formed from the disintegration of protein. We have further seen that the sugar-puncture of the medulla oblongata is not effective after removal of the suprarenal (nor, according to Cushing, after extirpation of the pituitary) and probably acts through these organs. Removal of the thyroid prevents, whilst removal of the parathyroids facilitates, both pancreatic and bulbar glycœmia and glycosuria. The thyroid autacoid may therefore be regarded as antagonistic to that of the pancreas, whilst the parathyroid assists it.

We have seen that brushing the pancreas with adrenine provokes marked hyperglycæmia and glycosuria and that this is not merely due to absorption of the autacoid into the general circulation is shown by the fact that the excess of sugar is far greater than when other organs are so treated. It is not, however, only through the pancreas that adrenine-glycosuria is produced, for it has been shown by various observers that there is an increase of sugar in depancreatized animals, and also in cases of diabetes in man (Paton), as the result of adrenine injection. Moreover, the effect of adrenine is produced immediately both in normal and in depancreatized animals, whereas it takes some hours for the effect of depancreatization upon carbohydrate metabolism to show itself. On the other hand, Zuelzer and others have found that adrenine-glycosuria is prevented by pancreas extracts and even by pancreatic juice: the effect is, however, according to de Meyer, not due to an antagonizing autacoid, but to the effect of the extracts upon the permeability of the kidney for sugar. The result of administering pilocarpine, which produces marked secretion from the pancreas by exciting the secreting endings of the vagi, is also to prevent adrenine-glycosuria: possibly it acts by stimulating the nerve-endings to the islet-cells. An increased tolerance to sugar is associated with diminished activity of thyroid, pituitary (posterior lobe) and suprarenal (medulla): a diminished tolerance with the opposite condition of these glands. According to Eppinger, there is mutual inhibition between the activity of the autacoid of the pancreas which affects carbohydrate metabolism and those of the thyroid and suprarenals: whereas the two last named mutually assist one another. According to Falta and Rudinger, thyroid and parathyroid are mutually opposed in their effect upon sympathetic nerve-endings and through these upon carbohydrate metabolism as influenced by the suprarenals and pancreas.

It will be seen from the above that the whole question of the mode of production of pancreatic diabetes is greatly in need of further elucidation. It would appear, however, that, apart from the liver, which is the chief stockhouse for carbohydrates, a number of organs are concerned in governing the metabolism and mobilization of carbohydrates, all being more or less interdependent. Of these organs the pancreas, with its internal secretion, occupies a central position.

THE INTERNAL SECRETIONS OF THE GENERATIVE GLANDS.

1. *In the male sex.*—It was shown by Leydig in 1850 that the intertubular connective tissue of the testicle is characterized by the presence of strands of epithelium-like cells; these have been termed the "cells of Leydig," and, collectively, "the interstitial gland" of the testis. This varies in development in different species of animals, being very well marked in the cat, less so in the dog and mouse, and still less in the rat and rabbit and in man. It is, however, nearly always present to some extent, and Tandler and Grosz have shown that in animals which undergo

seasonal changes in sexual activity the interstitial cells may be even better developed when the seminiferous tubules are inactive than during the time of their activity, their increased development generally immediately preceding that of the seminiferous epithelium. The tissue may also be found well developed in cases where there is atrophy of the contents of the seminiferous tubules, as in cases of cryptorchidism and after ligature of the vas deferens; although if the whole of the spermatic cord be included in the ligature, so that the circulation and nerve supply to the testicle is interfered with, the interstitial cells may share in the general atrophy of the organ which ensues.

These interstitial cells are polygonal in shape with spherical excentric nuclei, a well-marked nucleolus and a double centrosome. The cytoplasm often contains lipoid granules of a yellowish colour, which are blackened by osmic acid; and also other granules of protein nature, which may be either oxyphil or basophil. Frequently, as shown by Reinke, there are crystals within the cells, but the exact nature of these has not been determined.

Effects of castration.—The results of removal of the testes are well known. If the operation is performed in the child the secondary sexual organs—especially the prostate and seminal vesicles—remain in an undeveloped condition, and other male secondary sexual characters, such as the growth of hair on the face and pubes, the enlargement of the larynx, and the development of the male characters of the skeleton are arrested. In such animals as birds and deer, in which the external characteristics of the male sex are well marked, these fail to show themselves, the general features of development approaching those usual to the female sex. As Sellheim, Geddes and others have shown, modifications occur in the growth of the skeleton, the epiphyses long remaining separate; the limb bones are longer and more delicate than usual, and the sutures of the skull slower in ossifying. The mental characteristics also undergo alteration, tending to retain a more infantile type. Most of the ductless glands are affected, the thyroid and pituitary being diminished, the suprarenal cortex and thymus increased in size: the last named organ shows arrest of its normal retrogressive changes. If castration is performed in the mature animal, and therefore after the secondary sexual characteristics have become developed, there may be some retrogression of these, and such accessory generative glands as the prostate tend to undergo atrophic changes. But the effects now are mainly upon metabolism, shown in a tendency to increased formation of fat, although the limit of assimilation of carbohydrates is lowered and alimentary glycosuria is more easily produced. How far these effects on metabolism are direct or how far indirect, through the ductless glands, it is not possible to say.

In certain animals which undergo seasonal variations in sexual activity the secondary sexual characters which generally accompany these variations are generally also abolished or modified by castration. Thus in stags, after castration, the antlers either remain undeveloped or if developed are shed prematurely and are either not replaced or replaced only by incomplete growths. But structures which are common to both sexes—where, for instance, both possess horns—are not modified by castration. In Arthropoda this correlation between the generative glands and the secondary sexual characters (which in many species are even more marked than in Vertebrata) does not hold good. Experiments upon caterpillars show that removal of the generative glands has no influence on the development of the male sexual characters of the imago; nor do the glands, if transplanted into individuals of the other sex, affect the secondary sexual characters or instincts of the host. This need not be taken to mean that the secondary sexual characters in these animals are not the result of an internal secretion, but may be interpreted by supposing that some organ other than the generative glands furnishes the internal secretion which produces those characters.

In Vertebrata, at any rate, there can be little doubt that the internal secretions of the generative glands are an important if not the chief factor in determining the development of the secondary sexual characters. And that this development is independent of the normal functions of the generative glands is shown by the fact that the ligature of the vas deferens has no effect in preventing it. Moreover, transplanted testes and even portions of the testis have been found capable (in birds) of preventing the results of castration: the comb, wattles, spurs, etc., of the cock being developed in the usual way. Nussbaum's experiments on the effect upon the development of the thumb-pad of grafting pieces of testis from another frog into the dorsal lymph sac of a castrated male frog also point to the existence of an internal secretion of the testicles in these animals.

It seems certain, therefore, that the development of the secondary sexual characters in the male sex is dependent upon an internal secretion of the testicle and it is highly probable that it is yielded by the interstitial epithelium. This is indicated by various facts. In cryptorchids, and also after experimental ligature of the vas deferens, in both of which, as we have seen, the seminiferous epithelium is atrophied but the interstitial tissue is well developed, the secondary sexual characters and sexual desire are normal. Successful implantation of the whole or part of a testicle in a young castrated animal is also followed by development of those characters, although in many cases the seminiferous epithelium of the graft disappears. Bouin and Ancel state that extract of testicle freed from all morphological elements may, when injected, produce a similar result. In support of the theory that the autacoid which affects the development of the secondary sexual organs and characters is formed by the interstitial cells they have found that if one testicle be removed from a rabbit and the remaining one have its vas ligatured its interstitial tissue becomes hypertrophied. Further, it is known that if the testicles be treated by X-rays the seminiferous epithelium undergoes degeneration, although the interstitial tissue is not, at first at any rate, attacked. Young animals so treated develop normal secondary sexual characters. On the other hand, remarkable cases have been described, in both male and female sex, in which tumours of the testicle and ovary apparently malignant in character occurring in children have been accompanied by a general growth of stature and by premature appearance of secondary sexual characters, such as growth of hair on the face in the male and in the armpits and on the pubes in both sexes, development of breasts and external generative organs: in short, all the signs of puberty; which, on removal of the tumour, have been found to disappear. These seem to be cases of tumour cells taking on the functions of the normal cells from which they have developed (see Lecture II).

2. *In the female sex.*—The ovary contains besides the Graafian follicles with their ova, follicular epithelium and liquor folliculi, a highly vascular stroma formed of a peculiar connective tissue, firm in texture and containing numerous spindle-shaped cells. In some animals it is possible to discover in the stroma groups of cells of a different appearance from that of the ordinary stroma cells. These have been named the "interstitial cells" of the ovary and have been by some thought to be analogous to the interstitial cells of the testicle. But the evidence in favour of this supposition is far from conclusive. There are also formed during the period of sexual activity—i. e. the period when Graafian follicles are undergoing maturation, with eventual extrusion of the contained ova and liquor folliculi and of part of the follicular epithelium—the so-called *corpora lutea.* These are developments of the burst follicles, but their full development only occurs if pregnancy takes place: otherwise the *corpus luteum* after undergoing a certain amount of development becomes the subject of retrogressive changes and presently atrophies and disappears. But in the event of pregnancy occurring important changes take place both in the follicular epithelium which remains in the burst follicle, and in the vascular wall of the follicle (*theca*) which is derived from the ovarian stroma. The follicular epithelium proliferates and the individual cells become greatly enlarged and filled with lipoid granules (which give the yellowish colour from which the name *corpus luteum* is derived), whilst the inner layer of the *theca* also exhibits proliferation of its cells, and these, along with the bloodvessels, grow in amongst the luteal cells derived from the follicular epithelium. Thus the corpus luteum becomes vascularized

and also provided with a framework of connective tissue, which extends towards the scar formed where the follicle originally burst, in the form of a central strand from which in sections columns of luteal cells appear to radiate.

The corpus luteum is well marked throughout pregnancy, although towards the end it becomes less sharply defined from the ovarian stroma; its cells tending to diffuse into this and eventually losing their characteristic features. Similar changes occur—but with far less increase in size—in burst follicles where pregnancy has not supervened. The *corpora lutea* thus produced have been termed *corpora lutea spuria* to distinguish them from the *corpura lutea vera* of pregnancy. But the mode of formation and of disappearance seems to be similar, although occurring sooner. It seems not improbable that it is some of the cells derived from previous corpora lutea that have been described by various observers as interstitial epithelial cells, for the cells so described closely resemble luteal cells, and in some animals groups of cells derived from corpora lutea which have disappeared remain a long time visible within the stroma.

Effects of spaying. The effects resulting from removal of both ovaries (*oöphorectomy; spaying*) are not so marked externally as in the similar operation in the male sex. If performed in young animals, or if the ovaries are congenitally atrophic, it is not infrequently found that characters distinctive to the male are to some extent assumed. In the human subject, as well as in animals, a constant result is that the uterus remains small: the external changes characteristic of puberty either do not occur or are greatly modified: there is no sign of menstruation. A tendency to the male type of trichosis is often also exhibited. When the operation is performed subsequent to puberty the results are less marked—but menstruation ceases and there is sometimes atrophy of the breasts; in animals a diminution in size of the uterus and Fallopian tubes has been substantiated. Metabolism is affected mainly as in males in the direction of a tendency towards adiposity. This, however, may be indirect and through the ductless glands, which are affected much in the same way as in the male sex by removal of the testicles.

Doubtless, as in the male sex, the effects which are produced by the ovaries in determining the female secondary sexual characters are due to an internal secretion. And reasoning from analogy one would be disposed to refer the production of this not to the generative epithelium but to special cells in the ovarian stroma. Some authorities have looked upon the so-called interstitial cells in this light and have supposed that they correspond with those of the testicle both morphologically and physiologically.

They are, however, affected by the X-rays, whilst those of the testicle are not, and, as we have seen, they show, when present, many analogies with the cells of the corpora lutea. The latter at any rate appear not to be concerned with the secondary sexual phenomena, for it has been shown that heat in animals will still occur if the corpura lutea are destroyed, or if none are present in the ovary. Moreover, the changes which follow spaying can be prevented by ovarian grafts and these may contain no corpora lutea. The grafts may also show after a time no Graafian follicles—these having undergone degeneration and disappearance. This is not, however, a necessary consequence of reimplantation, for instances are recorded of pregnancy supervening after reimplantation of ovaries in spayed animals. Such an occurrence has been reported in the case of a woman by Halliday Croom. But even in the absence of Graafian follicles from the implanted ovarian tissue, Marshall and Jolly and McIlroy have shown that the atrophic changes in the uterus which ordinarily follow spaying are prevented. It would seem, therefore, that the cells of the ovarian stroma, not the generative cells, are the source of the autacoids which maintain the nutrition and integrity of the uterus and produce the secondary sexual characters; but it cannot be stated definitely which are the cells of the stroma that give rise to these autacoids. It is possible that the so-called interstitial cells may so act; but, as we have seen, these are not recognizable as distinct structures in all animals.

Steinach has found that implantation of ovaries into young castrated male rats and guineapigs causes the appearance of certain secondary characters which are essentially feminine, including hyperplasia of mammae and secretion of milk. And similarly he obtained secondary male characters in spayed females in which he succeeded in implanting testicles.

Internal secretion of the corpora lutea.—That the corpora lutea have some internally secreting function is highly probable. Their epithelium is distinctively glandular in appearance and their vascularity suggests that whatever is produced within them is passed directly into the blood. Th. Sack found that if corpus luteum be added to the food of white rats it promotes retention of nitrogen, i. e. laying on of flesh, in females but not in males. That corpora lutea are related to the development of the mammary gland during pregnancy appears from the experiments of Ancel and Bouin and of O'Donoghue, who have found that if in the virgin rabbit a Graafian follicle be ruptured (even by mechanical means) so that a corpus luteum develops, the mammæ undergo evolution; whereas if a corpus luteum fails to form there is no such evolution. Hammond and Marshall find that under these circumstances the development of the mammæ may even proceed so far as to produce free secretion of milk.

The development of corpora lutea in non-pregnant animals is also correlated with marked uterine hyperplasia. Further, extracts of corpus luteum have a stimulating effect on the outpouring of the secretion of the mammary gland only second in activity to that caused by extracts of the posterior lobe of the pituitary. But the chief function of its internal secretion seems to be related to the formation of the uterine decidua and the fixation of the embryo. Fraenkel—working upon a hypothesis suggested by Born—found that if in mammals the corpora lutea are destroyed at an early period of pregnancy the embryo does not become adherent to the mucous membrane of the uterus and ceases to develop. L. Loeb has observed that mechanical stimuli are able to produce the formation of decidual membrane if corpora lutea are present in the ovary, but that there is no such formation in their absence. Extracts of corpus luteum are not in this respect able to replace the functions of the removed organs. Loeb has also shown that in the guineapig the extirpation accelerates bursting of the ripe Graafian follicles, i. e. is conducive to ovulation; from this it may be deduced that their presence militates against ovulation.

It is further stated by Ancel and Bouin that if all the corpora lutea are destroyed in a pregnant rabbit the development of the mammary gland is arrested, and it is inferred that their secretion is necessary for such development. It must, however, be stated that it is difficult to destroy all the corpora lutea in a rabbit's ovary without practically destroying all the ovarian tissue, for the corpora lutea of the pregnant rabbit form by far the greater mass of the ovary.

Internal secretion of uterus.—There is some evidence that in certain states the uterus itself may yield an internal secretion. Bouin and Ancel have described an epithelial formation in the muscular coat of the uterus of the rabbit and guineapig during the latter half of pregnancy which they consider to be related to the development of the mammary glands during the final period of gestation and the production of milk. To this formation they have given the name of "*glande myometricale endocrine.*" Mackenzie found that extracts from the involuting uterus of the cat after parturition causes a free flow of milk from the incised nipple of lactating animals. He obtained no such results with extracts made either from the non-pregnant uterus except shortly after parturition, or from the pregnant uterus. He infers therefore that the uterus contains a galactagogue hormone only at this period.

Internal secretion of mammary gland.—A similar or even better marked galactagogue effect was obtained by Mackenzie as the result of intravenous injection of extract of lactating mammary gland: although no result is obtained from the gland of non-lactating animals.

Adler states that subcutaneous injection of the extract of mammary gland produces enlargement of the suprarenals and increase of adrenine in the blood, sometimes sufficient to cause glycosuria. He also found it to arrest the development of the embryo and even to produce abortion in pregnant animals.

Internal secretion of the placenta.—Various observers have described experiments which seem to show that hypodermic administration of extract of placenta or feeding with placenta produce growth of the mammary gland and an increased secretion of milk. But Mackenzie found that, so far from the latter being the case, injection of placental extract tends to inhibit the effect of galactagogue extracts such as pituitary or corpus luteum. A similar result was obtained with extract of fœtus, which has also been thought to promote mammary development. It would seem more probable, therefore, that both placenta and fœtus produce chalonic autacoids which have an inhibitory effect on milk secretion; and as a commentary on this it may be noted that the secretion of milk by the mammary gland does not begin to appear until the removal of any influence which may be derived from them.

378.73
L54J
09

LELAND STANFORD JUNIOR UNIVERSITY PUBLICATIONS
UNIVERSITY SERIES

no. 19

The Pronoun of Address
in
English Literature of the Thirteenth Century

BY
ARTHUR GARFIELD KENNEDY
Instructor in English Philology

STANFORD UNIVERSITY, CALIFORNIA
PUBLISHED BY THE UNIVERSITY
1915

UNIVERSITY SERIES

INHERITANCE IN SILKWORMS, I. Vernon Lyman Kellogg, Professor of Entomology. 89 pp., 4 plates. 1908. Price $1.00.

THE OPISTHOBRANCHIATE MOLLUSCA OF THE BRANNER-AGASSIZ EXPEDITION TO BRAZIL. Frank Mace McFarland, Professor of Histology. 105 pp., 19 plates. 1909. Price, $1.00.

A STUDY OF THE NORMAL CONSTITUENTS OF THE POTABLE WATER OF THE SAN FRANCISCO PENINSULA. John Pearce Mitchell, Assistant Professor of Chemistry. 70 pp., 1 map. 1910. Price, 50c.

SYNOPSIS OF THE TRUE CRABS (BRACHYURA) OF MONTEREY BAY, CALIFORNIA. Frank Walter Weymouth. 64 pp., 14 plates. 1910. Price, 50c.

THE OSTEOLOGY OF CERTAIN SCOMBROID FISHES. Edwin Chapin Starks, Assistant Professor of Zoology. 49 pp., 2 plates, 1 text figure. 1911. Price, 50c.

A PHYSICAL THEORY OF ELECTRIFICATION. Fernando Sanford, Professor of Physics. 69 pp., 2 plates. 1911. Price, 50c.

THE MATZKE MEMORIAL VOLUME. Papers by John Ernst Matzke, late Professor of Romanic Languages, and Thirteen Colleagues. 162 pp. 1911. Price, $1.00.

DAS HISTORISCHE PRÄSENS IN DER ÄLTEREN DEUTSCHEN SPRACHE. Bruno Boezinger, Assistant Professor of Germanic Languages. 91 pp. 1912. Price, 50c.

THE EFFECT OF A STRICTLY VEGETABLE DIET ON THE SPONTANEOUS ACTIVITY, THE RATE OF GROWTH, AND THE LONGEVITY OF THE ALBINO RAT. James Rollin Slonaker, Assistant Professor of Physiology. 36 pp., 1 plate, 15 text figures. 1912. Price, 50c.

CATALOGUE DE TOUS LES LIVRES DE FEU M. CHAPELAIN. (Bibliothèque Nationale, Fonds Français, Nouv. Acq., No. 318.) Colbert Searles, Associate Professor of Romanic Languages. 119 pp., 2 plates. 1912. Price, 75c.

THE DUDLEY MEMORIAL VOLUME. Papers by William Russel Dudley, late Professor of Botany, and Several Colleagues. 137 pp., 12 text figures, 9 plates. 1913. Price, $1.00.

THE FISHES OF THE STANFORD EXPEDITION TO BRAZIL. Edwin Chapin Starks, Assistant Professor of Zoology. 77 pp., 15 plates. 1913. Price, 75c.

(*Continued on third page of cover.*)

378.73
L54J
P9

LELAND STANFORD JUNIOR UNIVERSITY PUBLICATIONS
UNIVERSITY SERIES
20.

The Pronoun of Address
in
English Literature of the Thirteenth Century

BY
ARTHUR GARFIELD KENNEDY
Instructor in English Philology

STANFORD UNIVERSITY, CALIFORNIA
PUBLISHED BY THE UNIVERSITY
1915

STANFORD UNIVERSITY
PRESS

PREFACE

The following study in the pronoun of the second person is presented as a contribution to that growing fund of knowledge of Middle English which it is to be hoped will be invested sometime in the near future in a fairly comprehensive Middle English grammar. The literature of the thirteenth century—approximately, for I have exceeded the limits of the century somewhat, both at the beginning and the close—has been carefully read, and findings have been checked by whatever means was available, in order that the material offered in these pages might give as accurate an account as possible of the state of the pronoun during the period to be considered.

I realize that my plan of giving as far as possible the exact number of occurrences of forms and constructions may show more plainly to the observant reader things that I have overlooked. Moreover it may seem at times to lay too much stress upon forms which are probably mere scribal or editorial errors. Nevertheless, the conclusions that can be drawn from definite statements, when those statements are reasonably accurate, as I hope all will be found to be, are so much more satisfactory than mere general statements that I have ventured to give my findings largely in statistical form.

Inasmuch as the problem of the introduction into English of a *pluralis reverentiae,* or *formal singular* pronoun as I shall call it, for this period of the English language, has not been treated extensively before, I have endeavored to present at the same time a fairly complete bibliography, some few articles of which I am sorry to say I have not had access to.

I wish to acknowledge my indebtedness to Prof. Melville Best Anderson for material relating to the pronoun in Dante, and to Prof. O. M. Johnston and Prof. W. H. Carruth, whose studies of the pronoun in Italian and English, respectively, have made their help especially valuable. But most of all I desire to express my sincerest gratitude to Prof. Ewald Flügel, whose time and splendid library have been so freely at my disposal, to whose advice and guidance the present study owes much, and whose untimely death has rendered tardy this acknowledgment of gratitude. His example of scholarly exactness and thoroughness has been a constant inspiration to make this a work worthy of confidence, and if the final execution of it falls short of the ambition, the defects can be charged in a certain measure to the loss of his help and advice.

A. G. K.

CONTENTS

PAGE

A. General Bibliography 7
B. Texts Used 10
C. Abbreviations 19

SECTION I. INTRODUCTION 21

SECTION II. MORPHOLOGY 26
- I. Nominative Singular 26
- II. Genitive-Possessive Singular 31
- III. Dative-Accusative Singular 37
- IV. Intensive-Reflexive Singular Forms 39
- V. Nominative Dual 42
- VI. Genitive-Possessive Dual 42
- VII. Dative-Accusative Dual 43
- VIII. Intensive-Reflexive Dual Forms 43
- IX. Nominative Plural 43
- X. Genitive-Possessive Plural 45
- XI. Dative-Accusative Plural 49
- XII. Intensive-Reflexive Plural Forms 52

SECTION III. SYNTAX 54
- I. Nominative Singular and Plural 54
- II. Genitive-Possessive Singular 59
- III. Genitive-Possessive Plural 64
- IV. Dative-Accusative Singular and Plural 66
- V. Intensive-Reflexive Singular and Plural 72
- VI. Nominative Dual 77
- VII. Genitive-Possessive Dual 78
- VIII. Dative-Accusative Dual 78

SECTION IV. SEMASIOLOGY 80
- I. Pronoun of Confessional and Pulpit 80
- II. Ambiguous Usage 82
- III. The Formal Singular 85
- IV. Summary and Conclusions 89

A. GENERAL BIBLIOGRAPHY.

Bahrs: Über den Gebrauch der Anrede-Pronomina im Altenglischen. Realschule I. Ordn. zu Vegesack. Jahresbericht über das elfte Schuljahr 1879-1880, pp. 1-26.

Beckmann, E.: Über die attributive Construction eines sächsischen Genitivs oder substantivisch Possessivpronomens mit *of*. Engl. Stud. VIII, 412-414.

——— Über das reflexive Verb im Englischen. Herrigs Archiv LIX, 205-238. 1878.

Bernhardt, E.: Über *du* und *ir* bei Wolfram, Hartmann und Gottfried, und über *tu* and *vous* in den entsprechenden altfranzösischen Gedichten. Zeit. für deut. Phil. XXXIII, 368-390. 1901.

Bock, Karl: Die Syntax der Pronomina und Numeralia in König Alfreds Orosius. Göttingen diss. 1887.

Bosworth-Toller: An Anglo-Saxon Dictionary. Oxford, 1898.

Breitkreuz, Otto: Ein Beitrag zur Geschichte der Possessivpronomen in der englischen Sprache. Erlangen diss. 1882.

Carruth, W. H.: Pronouns of Address in "The Idylls of the King." Kansas Univ. Quart. VI, 159-170. 1897.

Chatelain, Emile: Du Pluriel de Respect en Latin. Revue de Philologie IV, 129-139. 1880.

Conway, R. S.: The Use of the Singular *Nos* in Cicero's *Letters*. Proc. of Cambr. Phil. Soc. V, 7-79. 1899.

Diehn, Otto: Die Pronomina im Frühmittelenglischen. Laut-und Flexionslehre. Kieler Studien I. 1901.

Diez, Fr.: Grammatik der romanischen Sprachen. 5. aufl., III, 802-805. Bonn, 1882.

Eckstein, Fr.: Zur Geschichte der Anrede im Deutschen durch die Fürwörter. Leipzig, 1869.

Ehrismann, Gustav: Duzen und Ihrzen im Mittelalter. Zeit. für deut. Wortforschung I, 117-149. 1900.

Einenkel, Eugen: Das englische Indefinitum. Halle, 1903.

——— Syntax in Kluge's 'Geschichte der englischen Sprache.' 2d ed. Strassburg, 1899.

Emerson, O. F.: A Middle English Reader. New York, 1909.

Farr, J. M.: Intensives and Reflexives in Anglo-Saxon and Early Middle English. Baltimore, 1905 (?).

Franz, W.: Shakespeare-Grammatik. Halle, 1900.

Freeman, Blanche: Forms of Address and Ejaculatory Expressions in the Towneley Plays. Stanford Univ. A. M. thesis. 1911.

Gaaf, W. van der: The Transition from the Impersonal to the Personal Construction in Middle English. Anglistische Forschungen XIV. 1904.

Ganter, August: Beiträge zur Geschichte der Anrede im Altfranzösischen (1250-1350). Heidelberg diss. 1905.

Gedike: Du und Sie in der deutschen Sprache. Berlin, 1794.

Grimm, Jacob: Deutsche Grammatik. New ed. by Roethe and Schroeder. Pt. IV, pp. 357-376. 1898.

Grote, W.: Die Anredeform im Französischen, Englischen und Deutschen.

Gummere, F. B.: The English Dative-Nominative of the Personal Pronoun. Amer. Jour. of Phil. IV, 283-290. 1883.

Harris, Myrtle: Use of Thou and You in Hamlet, Henry IV and The Tempest. Stanford Univ. A. M. thesis. 1909.

Heuser, W.: Zum kentischen Dialekt im Mittelenglischen. Anglia XVII, 73-90. 1894.

Jespersen, Otto: Progress in Language. New York, 1894.

Johnston, O. M.: The Use of Ella, Lei and La as Polite Forms of Address in Italian. Mod. Phil. I, 469-475. 1904.

Kaluza, Max:. Historische Grammatik der englischen Sprache. Berlin, 1901.

Kellner, Leon: Historical Outlines of English Syntax. London, 1905.
——— Introd. to Caxton's Blanchardyn and Eglantine. E. E. T. S. Vol. LVIII, pp. xxix-xxxvii. 1890.

Kluge, Fr.: Geschichte der englischen Sprache. 2d ed., Strassburg, 1899.

Koch, C. F.: Historische englische Grammatik. 2d ed., Kassel, 1878-1891.

Konrath, M.: Zur Laut-und Flexionslehre im Mittelkentischen. Herrigs Archiv LXXXVIII, 47-66; 157-180; LXXXIX, 153-166. 1892.

Lounsbury, T. R.: Pronouns of Address. Harper's Mag., Jan. 1913, pp. 200-206.

Maetzner, Ed.: Englische Grammatik. 3d ed., Berlin, 1880-1885.

Mahr, August: Formen und Formeln der Begrüssung in England von der normanischen Eroberung bis zur Mitte des 15. Jahrhunderts. Heidelberg diss. 1911.

Mommsen, Th.: Inschrift von Hissarlik. Hermes XVII, 540-3. 1882.

Morris and Skeat: Specimens of Early English. Parts I-II. Oxford, 1898.

Mussafia, A.: Die Anrede im Rolandsliede. Gröbers Zeit. für Rom. Phil. IV, 109-113. 1879.

New English Dictionary. Oxford.

Nölting: Über den Gebrauch der deutschen Anredefürwörter in der Poesie. Wismar, 1853.

Penning, G. E.: A History of the Reflective Pronouns in the English Language. Leipzig diss. Bremen, 1875.

Pfeffer, F.: Die Anredepronomina bei Shakespeare. Halle diss. 1877.

Pogatscher, Alois: Unausdrücktes Subjekt im Altenglischen. Anglia XXIII, 261-301. 1901.

Rubin, David: Beiträge zur Geschichte der Anrede im Altfranzösischen gegen Ausgang des Mittelalters (ca. 1350-1500). Heidelberg diss. 1910.

Sasse, J.: De Numero Plurali Qui Vocatur Majestatis. Leipzig, 1889.

Schliebitz, Victor: Die Person der Anrede in der französischen Sprache. Breslau diss. 1886.

Shipley, G.: The Genitive Case in Anglo-Saxon Poetry. Johns Hopkins diss. 1903.

Sievers-Cook: An Old English Grammar. 3d ed., Boston, 1903.

Skeat, W. W.: Introd. to William of Palerne. E. E. T. S. Vol. I, pp. xli-xliii. 1867.

Spies, Heinrich: Studien zur Geschichte des englischen Pronomens im 15. u. 16. Jahrhundert. Morsbachs Studien zur Engl. Phil. I. Halle, 1897.

Stowell, W. A.: Old French Titles of Respect in Direct Address. Johns Hopkins diss. 1908.

Stratmann-Bradley: A Middle English Dictionary. Oxford, 1891.

Stroebe, Klara: Altgermanische Grussformen. Paul und Braunes Beiträge XXXVII, 173-217. 1912.

Swane, W. L.: Studien zur Casussyntax des Frühmittelenglischen. Kiel diss. 1904.

Voges, F.: Der Reflexive Dativ im Englischen. Anglia VI, 317-374. 1883.

Witte: Bemerkungen über das neuangelsächsische Pronomen. Leipzig, 1877.

Wülfing, J. E.: Die Syntax in den Werken Alfreds des Grossen. Bonn, 1894.

B. TEXTS USED.

WITH GRAMMATICAL STUDIES, DATE, DIALECT AND MSS. USED.

1. Benedictine Rule (Winteney version) ed. Schröer, Halle, 1888. Quoted by page and line.
   Also—*a*. Collation by Kölbing in Engl. Stud. XVI, 152-4.
   b. Tachauer, J.: Laut-und Flexionslehre der Winteney Version der Regula St. Benedikti. Würzburg diss. 1900.
   Date, MS. of first quarter of 13th century (E. M. Thompson); text certainly a century earlier. Dialect, Northeastern Hampshire (Schröer). MS., Cott. Claudius D iii, Brit. Mus.
2. Poema Morale or Moral Ode. (1) Trin. and Jesus Coll. MSS. ed. Morris and Skeat, Specimens I, 194-221. (2) Egerton I and II ed. Furnivall in Early Engl. Poems and Lives of Saints, Philological Soc. 1858, pp. 22-34 and 58-71. (3) McClean MS. ed. Paues, Anglia XXX, 217-38. Quoted by line.
   Also—*a*. Zupitza, J.: Collations of T, J and E in Anglia IV, 406-410. 1881.
   b. Lewin, H.: Das mittelenglische Poema Morale. Halle, 1881.
   Date, Dialect and MSS.: MS. T = Trinity B. 14.52, Southern with some East Midland forms, written bef. 1200; two versions in MS. Egerton 613 (= E and e), Southern dialect of 13th century; MS. J = Jesus Coll. MS., Southern, written ca. 1250; MS. M = McClean MS. 123, Kentish, written ca. 1300. General dialect, Southern.
3. A Metrical Exposition of the Pater Noster ed. Morris, O. E. H., Ser. 1, pp. 54-71. Quoted by line.
   Date, Bef. 1200. Dialect, Southern. MS., Lambeth 487.
4. Old English Homilies, Ser. 1, ed. Morris, E. E. T. S. Vols. 29 and 34, pp. 1-53; 71-189. 1868. Quoted by page and line.
   Also—Cohn, Oswald: Die Sprache in der mittelenglischen Predigtsammlung der Hs. Lambeth 487. Berlin diss. 1880.
   Date, Bef. 1200. Dialect, Southern. MS., Lambeth 487.
5. Old English Homilies, Ser. 2, ed. Morris E. E. T. S. Vol. 53. 1873. Quoted by page and line.
   Also—Krüger, August: Sprache und Dialekt der mittelenglischer Homilien in der Handschrift B. 14 . 52. Trinity College Cambridge. Göttingen diss. 1885.
   Date, Bef. 1200. Dialect, Southern. Essex, perhaps (Morris).
   MS., B. 14 . 52. Trin. Coll., Cambr.

6. The Ormulum ed. Holt. Oxford, 1878. Quoted by line.
   Also—*a*. Sachse, Richard: Das unorganische E im Orrmulum. Halle diss. 1881.
   b. Blackburn, F. A.: The Change of *þ* to *t* in the Ormulum. Amer. Jour. of Phil. III, 46-58. 1882.
   Date, About 1200. Dialect, Northeast Midland. MS., Junius 1, generally conceded to have been written by Orm himself.

7. Vices and Virtues ed. Holthausen. E. E. T. S. Vol. 89. 1888. Quoted by page and line.
   Also—*a*. Schmidt: Heimat und Sprache der Vices und Virtues. Leipzig diss. 1899.
   b. Philippsen, Max: Die Deklination in den "Vices and Virtues." Kiel diss. 1911.
   Date, About 1200 (Holthausen). Dialect, Kentish or Southeastern. MS., Stow 240.

8. Alliterative Life of St. Katherine ed. Einenkel. E. E. T. S. Vol. 80. 1884. Quoted by line.
   Also—Stodte, H.: Über die Sprache und Heimat der Katherine Gruppe. Göttingen diss. 1896.
   Date, ca. 1200-30. Dialect, Southern. "Somewhere between Worcestershire and Dorsetshire—say Gloucestershire" (Einenkel, p. lvii). MSS., Royal 17A xxvii (R), Bodl. 34 (B) and Cott. Titus D xviii (T).

9. Alliterative Life of St. Marharete ed. Cockayne. E. E. T. S. Vol. 13. 1865. Quoted by page and line.
   Date, ca. 1200-30. Dialect, Southern. MSS., R[1] and B of Katherine.

10. The Liflade of St. Juliana ed. Cockayne and Brock. E. E. T. S. Vol. 51. 1872. Quoted by page and line.
    Date, ca. 1200-30. Dialect, Southern. MSS., R[1] and B of Katherine.

11. Four Prayers and Hymns and the Lesse Crede ed. Morris in O. E. H. Ser. 1, pp. 191-217. Quoted by page and line.
    Date, ca. 1200-30. Dialect, Southern. MSS., Cott. Nero A xiv (C) and Lambeth 487 (L).[2]

12. Sawles Warde ed. Morris in O. E. H., Ser. 1, pp. 245-267. Quoted by page and line.
    Also—Williams, J. F.: The Language of Sawles Warde. Anglia XXIX, 413-416. 1906.
    Date, ca. 1200-30. Dialect, Southern. MSS., R and B of Katherine.

---

[1] All quotations for Marh. and Jul. are from R unless B is specially designated.

[2] Since MS. L contains only the *Ureisun of Ure Lauerd* and shows no special variations of pronouns it is not quoted.

13. Hali Meidenhad ed. Cockayne. E. E. T. S. Vol. 18. 1866. Quoted by page and line.
    Also—Wülcker, R.: Über die Sprache der Ancren Riwle und die der Homilie: Hali Meidenhad. Paul u. Braunes Beiträge I, 209-239. 1874.
    Date, ca. 1200-30. Dialect, Southern. MSS., B and T of Katherine.
14. Wohunge of Ure Lauerd ed. Morris in O. E. H. Ser. 1, pp. 269-287. Quoted by page and line.
    Date, ca. 1200-30. Dialect, Southern. MS., T of Katherine.
15. The Ancren Riwle ed. Morton for Camden Soc. Vol. 57. 1853. Quoted by page and line.
    Also—*a*. Kölbing's Collation in Jahrb. für rom. u. engl. Phil. XV, 179-197. 1876.[3]
    b. Wülcker. (See above under Hali Meidenhad.)
    c. Brock, E.: The Grammatical Forms of Southern English (ab. a. d. 1220-30) occurring in the Ancren Riwle. Trans. of Phil. Soc. for 1865, pp. 150-167.
    d. Ostermann, H.: Lautlehre des germanischen Wortschatzes in der von Morton hrsg. Hs. der Ancren Riwle. Bonner Beiträge XIX. 1905.
    Date, ca. 1200-25. Dialect, Southern. MSS., Cott. Nero A xiv, Cott. Cleopatra C vi, Corp. Christi Coll. Cambr. cccii, Cott. Titus D xviii and Caius Coll. Cambr. 234.
16. Meidan Maregrete ed. Horstmann in Altenglische Legenden N. F., pp. 489-498. 1881. Quoted by line.
    Date, 1200-1250. Dialect, Southern. MS., Lost; text as preserved in Hickes' edition.
17. Metrical Credo-Pater Noster Group. ed. Maetzner in Sprachproben I, 1, 49-51. 1869. Quoted by line.
    Date, ca. 1200-50. Dialect, South Midland. MS., Arundel 292.
18. Prose Credo ed. Maetzner in Sprachproben I, 2, 1-2. Quoted by line.
    Date, 13th century. Dialect, Southern. MS. of Caius College.
19. Laȝamon's Brut, Versions A and B ed. Madden. 1847. Quoted by line.
    Also—*a*. Lucht, Paul: Lautlehre der älteren Laȝamon Handschrift. Palaestra XLIX. 1905.
    b. Luhmann, Adolf: Die Überlieferung von Laȝamons Brut nebst einer Darstellung der Betonten Vokale und Diphthonge. Morsbachs Studien XXII. 1906.
    c. Hoffmann, Paul: Das Grammatische Genus in Laȝamons Brut. Morsbachs Studien XXXVI. 1909.
    Date, ca. 1205. Dialect, West Midland or Southwestern. MSS., Cott. Caligula A ix (A) ca. 1225 A. D.; Cott. Otho C xiii ca. 1275 A. D.

---

[3] Statistics for the Ancren R. are based upon the text of the MS. Cott. Nero A XIV as edited by Morton, with Kölbing's collation. The collations by Prof. Macaulay in Mod. Lang. Rev. of 1914 have been examined, but came too late to be incorporated in the body of this work.

20. Religious Poems of Cotton and Jesus Coll. MSS. ed. Morris in Old Engl. Miscellany, Nos. 20-26. E. E. T. S. Vol. 11. 1873. Quoted by piece and line.

    Date, ca. 1225 or earlier. Dialect, Southern. MSS., Cott. Caligula A ix ca. 1225; Jesus Coll. MS. i, 29. ca. 1250.

21. Hymns of the Virgin and Christ ed. Morris in O. E. Misc. Nos. 28-30. Quoted by piece and line.

    Date, Early 13th century. Dialect, Southern. MS., Egerton 613.

22. Genesis and Exodus ed. Morris. E. E. T. S. Vol. 7. 1865. Quoted by line.

    Also—*a*. Kölbing's textual criticism in Engl. Stud. III, 273-334. 1880.

    b. Hilmer: Die Sprache von Genesis und Exodus. 1876.

    Date, ca. 1250, perhaps earlier. Dialect, East Midland. MS., Corp. Christi Coll. 444.

23. Proverbs of Alfred ed. Morris in O. E. Misc., pp. 102-138. Quoted by line.

    Also—*a*. Collations by Skeat of both texts in Trans. of Phil. Soc. 1897, pp. 399-418.

    b. Gropp, E.: On the Language of the Proverbs of Alfred. Halle diss. 1879.

    Date, ca. 1250 or earlier. Dialect, Southern. MSS., Trin. Coll. B. 14 . 39 . (K-W) and Jesus Coll. MS. 29 (J).[4]

24. Owl and Nightingale ed. Wells. D. C. Heath, Belles Lettres Series, 1909. Quoted by line.

    Also—*a*. Nölle, H.: Die Sprache des altenglischen Gedichts von der Eule und Nachtigall. Göttingen diss. 1870.

    b. Sherman, L. A.: A Grammatical Analysis of the Old English Poem of The Owl and Nightingale. Trans. of Amer. Phil. Assn., pp. 69-88. 1875.

    Date, Bef. 1225. Dialect, Southern. MSS., Cott. Caligula A ix (C) and Jesus Coll. MS. 29 (J).

25. Cuckoo Song. Facsimile of MS. No material found.

26. Religious Poems of Jesus Coll. MS. ed. Morris in O. E. Misc. Nos. 1 and 3-14; 16-19. E. E. T. S. Vol. 11. 1873. Quoted by piece and line.

    Date, ca. 1250. Dialect, Southern. MS., Jesus Coll. 29.

27. Bestiary ed. Morris in O. E. Misc., pp. 1-25. Quoted by line.

    Also—Hallback, E. S.: The Language of the Middle English Bestiary. Lund, 1905.

    Date, ca. 1250. Dialect, East Midland, toward the south. MS., Arundel 292.

28. Old Kentish Sermons ed. Morris in O. E. Misc., pp. 26-36. Quoted by page and line.

    Date, ca. 1250. Dialect, Kentish. MS., Laud 471.

---

[4] Since the J text stops at line 456 all figures and quotations are taken from the K-W text.

29. Floris and Blauncheflur ed. Lumby-McKnight. E. E. T. S. Vol. 14. 1866-1901. Quoted by line.
    Date, ca. 1250-1300. Dialect, East Midland, somewhat towards the south. MS., only MS. Cott. Vitellius D vii used.

30. Compassio Mariae ed. Napier. E. E. T. S. Vol. 103, pp. 75-86. 1894. Quoted by line.
    Date, ca. 1250 or later (Napier). Dialect, West Midland. MS., Tanner 169 (New Cat. 9955).

31. Proclamation of Henry III ed. Emerson in Middle Engl. Reader, pp. 226-7. 1909. Quoted by page and line.

32. Assumpcioun de Notre Dame ed. Lumby-McKnight. E. E. T. S. Vol. 14. 1866-1891. Quoted by line.
    Also—Gierth, Franz: Über die älteste mittelenglische Version der Assumptio Mariae. Engl. Stud. VII, 1-33. 1884.
    Date, ca. 1250-1300. Dialect, Southern. MS., Cambr. Gg. 4 . 27 . 2.[5]

33. Three Hymns to the Virgin and God ed. Morris in appendix to O. E. Hom. Ser. 2, pp. 255-271. Quoted by piece and line.

34. The Prisoner's Prayer ed. Ellis in Early English Pronunciation, Pt. II, pp. 428-439. E. E. T. S. Vol. VII. 1869. Quoted by line.

35. Minor Poems of Digby 86, acc. to Stengel's arrangement:
    (33) Les XV singnes de domesday.
    (35) Le diz de seint Bernard.
    (36) Ubi sount qui ante nos fuerount.
    (37) Chauncoun de noustre dame.
    (38) Þe sawe of seint bede prest.
    (40) Les ounsse peines de enfer.
    (49) Chauncun del secle.
    (52) Les nouns de vn leure en engleis.
    (62) La manere quel amour est pur assaier.
    (75) In manus tuas.
    I. Nos. 33 and 49-75 ed. (in part only) by Stengel, E.: Codicem Manu Scriptum Digby 86 etc. 1871.
    II. Nos. 35-38 ed. Furnivall in E. E. T. S. Vol. 117. 1901.
    III. No. 40 ed. Horstmann, Herrigs Archiv LXII, 403-6. 1879. Quoted by piece and line.
    Date, ca. 1275-90. Dialect, Southern. MS., Digby 86.

36. Dame Siriz ed. Zupitza in Übungsbuch, pp. 131-8. 7th ed., 1904. Quoted by line.
    Also—Kölbing's collation, Engl. Stud. V, 378-9.
    Date, Probably bef. 1272. Dialect, Southeastern. MS., Digby 86.

37. Life of St. Eustace ed. Horstmann in Altengl. Leg. N. F., pp. 211-219. 1882. Quoted by line.
    Date, ca. 1275-90. Dialect, Southern. MS., Digby 86.

---

[5] The other MSS. are too late to be of use here.

38. Psalter of Our Lady ed. Horstmann in Altengl. Leg. N. F., pp. 220-4. 1882. Quoted by line.
    Date, ca. 1275-90. Dialect, Southern. MSS., Digby 86 and Auchinleck MS.[6]

39. Thrush and Nightingale ed. Hazlitt in Early Popular Poetry of England I, 50-57. 1864. Quoted by line.
    Date, ca. 1275-90. Dialect, Southern. MSS., Digby 86 and Auchinleck MS.[7]

40. Vox and Wolf ed. Maetzner in Sprachproben I, 1, 130-6. 1869. Quoted by line.
    Date, ca. 1275-90. Dialect, Southern. MS., Digby 86.

41. Maximian. D version ed. Varnhagen, Anglia III, 275-285. 1880. H version ed. Böddeker in Altengl. Dichtungen des MS. Harl. 2253. 1878. Quoted by line.
    Date, 1275 or earlier. Dialect, Southern. MSS., Digby 86 (D) and Harl. 2253 (H).

42. Debate between Body and Soul (Version I). MS. D ed. Stengel in Cod. Manu Script. Digby 86, pp. 93-101. Quoted by stanza and verse. MS. H ed. Böddeker in Altengl. Dicht., pp. 233-43. Quoted by line.
    Also—Linow, W.: The disputisoun bitwen the bodi and the soule. Erlanger Beiträge I. 1889.
    Date, 1275 or earlier. Dialect, Southern. MSS., Digby 86 (D) and Harl. 2253 (H).[8]

43. Proverbs of Hending. Versions D and C ed. Varnhagen, Anglia IV, 180-200. 1881. Version H ed. Böddeker in Altengl. Dicht., pp. 287-300. Quoted by stanza and verse from D and C, by line from H.
    Date, Not later than 1275. Dialect, Southern with Midland peculiarities. MSS., Digby 86 (D) ca. 1275-90, Cambr. Gg. 1, i (C) ca. 1307 and Harl. 2253 (H) ca. 1310.

44. Harrowing of Hell ed. Hulme. E. E. T. S. Vol. C. 1907. Quoted by line.
    Date, 1250 or earlier. Dialect, Southern in D and H. MSS., Digby 86 (D), Harl. 2253 (H) and Auchinleck (A).[9]

45. Vier Geistliche Gedichte ed. Jacoby. 1890. Quoted by piece and line.
    Date, 1250-1300. Dialect, Southern. MS., Arundel 248.

---

[6] The Auchinleck MS. has not been utilized.

[7] Only Digby 86 has been used.

[8] While the two copies differ widely in the number of verses and reading in general the pronouns are alike with a few exceptions which will be specially noted. Hence quotations are from D, the better because fuller, copy.

[9] MS. A has not been used.

46. Surtees Psalter ed. Stevenson for Surtees Soc. 2 vols. 1843 and 1847.[10] Quoted by psalm and verse.
 Also—Collation by Wende in: Überlieferung und Sprache der mittelenglischen Version des Psalters etc. Breslau diss. 1884.
 Date, 1250-1300. Dialect, Northern. MSS., Cott. Vespasian D vii (C),[11] Egerton 614 (E), Harl. 1770 (A), Bodleian 927 (O 1), Bodleian 425 (O 2) and Corp. Christi Coll. Cambr. 278 (K).

47. Religious Poems of MS. Digby 2 ed. Furnivall in E. E. T. S. Vol. 117, pp. 753-7. 1901. Quoted by piece and line.
 Date, 1250-1300. MS., Digby 2.

48. Judas, A Ballad ed. Child in Engl. and Scot. Pop. Ballads, Vol. 10, p. 288. 1898. Quoted by line.
 Date, 13th century. Dialect, Southern. MS., B. 14 . 39 of Trin. Coll. Cambr.

49. The V Gaudia ed. Maetzner in Sprachproben, I, 1, 51-53. Quoted by line.
 Date, 13th century. Dialect, Southern. MS., B. 14 . 39 of Trin. Coll. Cambr.

50. Northern Legends, Collection I, ed. Horstmann in Altengl. Leg. N. F. as follows: Peter and Paul, pp. 77-81; Alexius, pp. 174-188. Quoted by piece and line.
 Date, ca. 1275-1300. Dialect, Northern. MS., only Ashmole 42 is used in this study.

51. Northern Legends, Collection II, ed. Horstmann as follows: Nos. 1-34 in Altengl. Leg. N. F., pp. 1-173, 1882; No. 35 in Altengl. Leg., pp. 226-240, 1875. Quoted by piece and line.
 Also—Retzlaff: Untersuchungen über den nordenglischen Legendencyclus der MSS. Harl. 4196 und Cott. Tib. E vii. Berlin diss. 1888.
 Date, ca. 1275-1300. Dialect, Northern. Only MS. Harl. 4196 has been used.[12]

52. Early South English Legendary ed. Horstmann as follows: No. 8 Leben Jesu, ein Fragment, 1873; No. 9 Kindheit Jesu, in Altengl. Leg. 1875, pp. 1-61; Nos. 10-67. E. E. T. S. Vol. 87. 1887. Quoted by piece and line.
 Also—*a*. Mohr, Fr.: Sprachliche Untersuchungen zu den mittelenglischen Legenden aus Gloucestershire. Bonn diss. 1889.
 b. Schmidt, W.: Über den Stil der Legenden des MS. Laud 108. Eine Untersuchung zur Ermittelung der Heimat und Verfasser derselben. Halle diss. 1893.
 Date, ca. 1280-90. Dialect, Southern. MS., Laud 108.

---

[10] I have been so fortunate as to have at my disposal Dr. Flügel's copy of the Surtees Society edition in which Dr. Horstmann has carefully made many corrections, evidently while preparing his own edition of the Psalter.

[11] Only MS. C has been made use of.

[12] The work of the second scribe begins with Legend 19, l. 170.

53. Debate between Body and Soul, Version II, ed. Linow. 1889. Quoted by line.
    Also—Heesch, G.: Über Sprache und Versbau des halbsächsischen Gedichts: "Debate of the Body and the Soul." Kiel diss. 1884.
    Date, 1250-1300. Dialect, East Midland with West Midland and Southern forms (Linow). MS., Laud 108 only has been used.

54. King Horn ed. McKnight. E. E. T. S. Vol. 14. 1901. Quoted by line.
    Also—Wissmann, Th.: King Horn: Untersuchungen zur M. E. Sprache und Literaturgeschichte. Quellen u. Forsch. XVI. 1876.
    Date, ca. 1250-1300. Dialect, Southern, perhaps of Essex. MSS., Cambr. Gg. 4 . 27 . 2 (C), Laud 108 (L) and Harl. 2253 (H).

55. Havelok the Dane ed. Skeat. Oxford, 1902. Quoted by line.
    Also—*a.* Ludorff, F.: Über die Sprache des altengl. Lay *Havelok þe Dane.* 1873.
    b. Hohman, L.: Über Sprache und Stil des altenglischen Lai Havelok þe Dane. Marburg diss. 1886.
    Date, ca. 1290 or earlier. Dialect, East Midland. MS., Laud 108.

56. Cursor Mundi ed. Morris. E. E. T. S. Vols. 57, 59, 62, 66, 68, 99, 101. 1874-1893. Quoted by line.
    Also—Hörning, W.: Die Schreibung der Hs. E. des Cursor Mundi. Berlin diss. 1906.
    Date, 1254-1290 (Hupe). Dialect, Northern. MSS. used, Cott. Vespasian A iii (C) and Edinburgh MS. (E) which contains only ll. 18989-24968.

57. Scoffing Verses quoted in the Chronicle of Pierre de Langtoft ed. Wright in appendix to: Political Songs, Publ. of Camden Soc. Vol. 17, pp. 273-323. 1839. No material found.

58. Chronicle of Robert of Gloucester ed. Wright for Rolls Series. 2 vols. 1887. Quoted by line.
    Also—*a.* Pabst, Felix: Die Sprache der mittelengl. Reimchronik des Robert von Gloucester. I. Lautlehre. Berlin diss. 1899.
    b. ——— Flexion bei Robert von Gloucester. Anglia XIII, 202-301. 1891.
    Date, ca. 1298-1300. Dialect, Southwestern. MS. used, Cott. Caligula A xi, ca. 1320-30.

59. Song of Joseph ed. Heuser in Bonner Beiträge XVII, pp. 83-121. 1905. Quoted by line.
    Date, 13th century. Dialect, Southern. MS., Bodleian 652.

60. Kildare Poems ed. Heuser in Bonner Beiträge XIV. 1904. Quoted by piece and line.
    Date, ca. 1308-18. Dialect, Anglo-Irish, largely of Southern English origin. MS., Harl. 913.

61. Lyrical Poems of Harl. 2253 ed. Böddeker. 1878. Quoted by group, piece and line. P = Political Poems, W = Worldly, G = Religious.
Also—Schlüter, A.: Über die Sprache und Metrik der mittelenglischen weltlichen und geistlichen lyrischen Lieder des MS. Harl. 2253. Breslau diss. 1884.
Date, Probably composed at various times near the end of the 13th century. Dialect, Written in various dialects and finally put into the Southwestern dialect. MS., Harl. 2253 ca. 1310.

62. Legend of Marina ed. Böddeker in Altengl. Dicht., pp. 254-263. Quoted by line.
Date, ca. 1310. Dialect, Southern. MS., Harl. 2253.

63. Metrical Dream-Book ed. Förster in Herrigs Archiv CXXVII, 31-48. 1911. Quoted by line.
Date, Bef. 1300. Dialect, Southwestern. MS., Harl. 2253.

C. ABBREVIATIONS.

		NO.
Ancren R.	Ancren Riwle	15
Ass.	Assumpcioun de Notre Dame	32
B. & S. I	Debate of Body and Soul, Version I	42
B. & S. II	Debate of Body and Soul, Version II	53
Best.	Bestiary	27
B. Rule	Benedictine Rule	1
Comp. Mar.	Compassio Mariae	30
Curs. M.	Cursor Mundi	56
Digby 86	Minor Poems of Digby 86	35
Digby Psalter	The Psalter of Our Lady	38
Dream-Book	Metrical Dream-Book	63
Eg. Hymns	Hymns of the Virgin and Christ	21
Eust.	Life of St. Eustace	37
Exp. Pat. Nos.	Exposition of the Pater Noster	3
V Gaudia	The V Gaudia	49
Fl. & Bl.	Floris and Blauncheflur	29
Gen. & Ex.	Genesis and Exodus	22
G. G.	Vier M. E. Geistliche Gedichte	45
Hali M.	Hali Meidenhad	13
Harl. 2253	Lyrical Poems of Harl. 2253	61
Hav.	Havelok the Dane	55
H. H.	Harrowing of Hell	44
Horn	King Horn	54
Hymns of CCCO.	Three Hymns to the Virgin and God	33
Jos.	Song of Joseph	59
Judas	Judas, A Ballad	48
Jul.	Liflade of St. Juliana	10
Kath.	Alliterative Life of St. Katherine	8
Kent. Serm.	Old Kentish Sermons	28
Kil. Poems	Kildare Poems	60
Laȝ. A or B	Laȝamon's Brut	19
Lamb. Hom.	Old English Homilies, Series 1	4
Marh.	Alliterative Life of St. Marharete	9
Marina	Legend of Marina	62
Max.	Maximian	41
Meidan M.	Meidan Maregrete	16
Metr. Credo	Metrical Credo-Pater Noster Group	17
Nor. Leg. I	Northern Legends, Collection I	50
Nor. Leg. II	Northern Legends, Collection II	51
O. & N.	Owl and Nightingale	24
Orm.	Ormulum	6
P. Mor.	Poema Morale	2

P. P.	Prisoner's Prayer	34
Prayers & Hymns	Four Prayers and Hymns and the Lesse Crede	11
Proc.	Proclamation of Henry III	31
Prose Credo	Prose Credo	18
Prov. of A.	Proverbs of Alfred	23
Prov. of Hend.	Proverbs of Hending	43
Psalter	Surtees Psalter	46
R. Glouc.	Chronicle of Robert of Gloucester	58
R. Poems of Digby 2	Religious Poems of MS. Digby 2	47
R. Poems of C & J	Relig. Poems of Cotton and Jesus Coll. MSS.	20
R. Poems of J	Religious Poems of Jesus Coll. MS.	26
Siriz	Dame Siriz	36
So. Leg.	Early South English Legendary	52
S. Warde	Sawles Warde	12
Thrush	Thrush and Nightingale	39
Trin. Hom.	Old English Homilies, Series 2	5
V. & V.	Vices and Virtues	7
Vox	Vox and Wolf	40
Woh.	Wohunge of Ure Lauerd	14

THE PRONOUN OF ADDRESS IN ENGLISH LITERATURE OF THE THIRTEENTH CENTURY

SECTION I. INTRODUCTION.

The period of transition in the history of the English language extending from about the beginning of the twelfth century to the early part of the fourteenth witnessed some interesting changes in the form, use and meaning of the pronoun of address commonly termed the pronoun of the second person. The nom. sing. and nom. plur. acquired the forms familiar today, the gen-poss. sing. short form won a place for itself, the dual disappeared early in the period, and the oblique cases of the plur. took on the initial *y* after two or three preliminary stages of spelling had been passed thru. The older genitive constructions gave way largely to prepositional phrases, *-e*-forms were gradually used with a total disregard of propriety, various intensive-reflexive combinations were tried and cast aside, and there was even a slight tendency to substitute a dat-acc. form for the nom. But most interesting of all, because it concerns not only the grammatical but the social history of the period, was the introduction of what may be termed, for the Middle English period at least, the formal singular, *i. e.*, the plur. form applied to an individual to show respect or reverence.

Inasmuch as the present study aims at a descriptive rather than a historical treatment of the subject, and since in the semasiological part of the field, at least, little material has been gathered as yet for a historical study, only a general outline of the morphology, syntax and semasiology of the pronoun of address as found on English soil before approximately 1200 A. D. must suffice here.

In general, the forms, for the second person, were as follows in West Saxon:

Sing.		*Dual*		*Plur.*	
Nom.	ðu	Nom.	git	Nom.	ge
Gen.	ðin	Gen.	incer	Gen.	eower, iower
Dat.	ðe	Dat.	inc	Dat.	eow, iow
Acc.	ðe (ðec)	Acc.	inc (incit)	Acc.	eow, iow (eowic)[12]

---

[12] Sievers-Cook, Old Engl. Gram., p. 243.

Of course the variant form ƿ was common in some O. E. monuments, and the *g* (as used in Sievers-Cook's Gram.) was written in such a MS. as that of the Beowulf ȝ (cf. *ȝe* l. 237 et olim); hence these variations in spelling cannot be taken as of weight in the earlier time—nor in the thirteenth century, for that matter, altho the *g/ȝ* variation presumably signifies more than it did in the O. E. MSS. The vowel or diphthong variants for the plur. forms especially are numerous in the O. E. dialects and would doubtless throw light upon some of the forms found in the thirteenth century.

Syntactically the older pronoun was simpler, because it had more inflectional forms to depend upon than in the later period. The gen. and the poss. adj. are to be regarded as distinct; the simple dat. or acc. was used reflexively, since no independent reflexive pronoun existed; and emphasis was gained by attaching the pronoun-adjective *self* to the proper case of the simple pronoun, altho, even in the O. E., signs of a new intensive compound occur. (Cf. Beowulf 594 swa *þu self* talast, but 953 þu *þe self* hafast dædum gefremed[14]).

In its semasiological aspects, the O. E. pronoun of address was quite free from any ambiguity such as we find occurring after the English began to use the *pluralis reverentiae* in their social intercourse. As far as I have been able to discover, the O. E. vernacular literature shows no instances of such usage, and likewise the earliest M. E. down to a time when the dominant literary influence in England was Latin or French, certainly not Scandinavian. Hence it would seem probable that the practice of addressing a superior with a plural pronoun was borrowed from either the Latin or the French.

In the Latin the practice had been more or less common since about the fifth century A. D. Ehrismann places the beginnings for the Latin first person—the plur. *nos* applied by the emperor to himself—in the time of Sardianus III (a. 238-244), and for the second person in the second half of the fourth century.[15] As would be expected, and as we shall find true of English usage in the thirteenth century, many instances which have been cited as examples of an early Latin *pluralis reverentiae* are ambiguous and can easily be explained as *plurales societatis,* the speaker regarding himself or being regarded as the representative of a political body or religious organization, hence only one of several.[16] Gradually, however, the practice of addressing temporal rulers and church dignitaries with this special mark of respect became so general as to be regarded as almost obligatory. Ehrismann finds many examples of this formal address, as well as of the formal use of the first person, in the Variae of Cassiodorus, in proclamations of early Frankish kings, in the Burgundian and Lombard laws, and elsewhere in mediaeval Latinity. So it is not surprising that it is found rather early in the German and French vernacular literature.

---

[14] The confusion due to the position of *self* near *þe* instead of *þu* might easily lead to the retention of *þe* in other sentences where it was not needed.

[15] Ehrismann, Dutzen und Ihrzen im Mittelalter.

[16] The tradition that Caesar was first addressed with the *pluralis reverentiae*

Jacob Grimm,[17] and others following his lead, have been wont to date the beginning of the practice, for the German, at about Otfrid's time. Ehrismann finds in both the *Waltharius* and the *Ruodlieb* use of the informal and the formal singular corresponding to the general practice of the times, presumably. It is evident that German monastic life knew it at an early date. Eckstein says, "In den altdeutschen Gesprächen aus dem 10n Jahrhundert wechselt das vornehme Ihr mit dem verächtlichen Du." [18]

In the French, as Ganter [19] has shown, the use of the formal sing. had become so common by the time Chrêtien de Troyes wrote that not only were superiors but even equals addressed thus formally. Indeed in Chrêtien's romances, written late in the twelfth century, the informal sing. *tu* expresses usually condescension or contempt on the part of the speaker, except in the case of parent to child, apostrophe and address to God. Lancelot uses it in addressing his dwarf (v. 5090 [20]), and in speaking to Fortune, who has misused him (v. 6488 ff.); Kay mixes in a few contemptuous *tu*'s in addressing Lancelot (v. 4028, etc.); Lancelot also addresses thus informally a conquered knight (v. 2767), and is himself thus spoken to by a strange maiden (v. 2804 ff.). In Floire et Blancheflor the pronouns are used in much the same manner; so also in Aucassin et Nicolete. Nicolete even uses the formal sing. in addressing her absent lover (cf. v. 5, v. 19, etc.[21]).

---

has, according to Mommsen, no foundation (Mommsen, Inschrift von Hissarlik, Hermes XVII, p. 544); and Cicero's use of a plur. in speaking of himself shows, according to Conway (Use of the Singular *Nos* in Cicero's Letters), a feeling rather of hostility or estrangement toward Cicero's correspondents.

[17] J. Grimm, Deutsche Grammatik, Pt. IV, p. 359.

[18] Eckstein, Zur Geschichte der Anrede im Deutschen durch die Fürwörter, p. 472.

[19] Ganter, Beiträge zur Geschichte der Anrede im Altfranzösischen.

[20] Chrêtien de Troyes' Lancelot ed. Foerster in Sämtliche Werke, vol. IV. Halle, 1899.

[21] Aucassin et Nicolete ed. Suchier 4th ed. Paderborn, 1899.

A lack of collected material relating to the use of the formal sing. in Latin and French (particularly Norman) literature written on English soil makes it impossible to do more than glance at the problem of the immediate influences working upon the English vernacular. Monastic life was undoubtedly closely akin to that on the continent, so that one would expect any practice familiar abroad to be also in vogue in English monasteries and in English Latinity. However the entire chronicle of Geoffrey of Monmouth, written toward the middle of the twelfth century, contains only two or three examples of the *pluralis reverentiae*. Once Hoel, in addressing King Arthur, uses a plur. form (Bk. IX, Chap. XVII, 1-4 [22]), but immediately afterward lapses into the sing., and once Gorlois uses a plur. form in addressing King Uther (Bk. VIII, Chap. XVIII, 25); the latter example, however, is questionable.

The Anglo-Norman Wace, using Geoffrey's material a few years later (ca. 1155), also adheres generally to the use of the informal sing., and this is important when Wace's influence upon Laȝamon is taken into consideration. While, for example, the children, in such French romances as Chrêtien's Lancelot and Floire et Blancheflor, address their parents with *vos* (cf. Meleaganz to his father, Lancel. 4868, or Floire to his mother, Floire et Blanch. 875), in Wace's Brut Leir's daughters address the king with the informal *tu* in spite of their desire to flatter him.

On the other hand, in the *Lais* of Marie de France, written only a few years after Wace's Brut but in the different atmosphere of the English court, the formal sing. predominates, altho its use is by no means regular or perfectly consistent (cf. wife to Bisclavret, *Di* mei . . . u sunt *vos* dras, Bisclavret 71 [23]; princess to chamberlain, El. 377; Launfal's beloved to King Arthur, Lan. 637; etc.).

It is evident from the few pieces just considered that in Anglo-French literature of the twelfth century of a more or less romantic nature, such as the *Lais* of Marie de France, the formal sing. was regarded as a sign of good breeding. It is also equally manifest that in both Latin and French historical literature, produced on English soil, the formal sing. could be largely ignored. Whether the formal sing. was deemed a feature of romantic narration and an attribute of court life, exclusively, in England at this time, could only be determined by a much more thoro search thru the Latin and Anglo-Norman literature of twelfth-century England. It is hardly likely that the monks and clergy—for most extant English literature of the twelfth and thirteenth centuries appears to have emanated from that class—could have failed to come in contact with the use of the formal sing. both in Latin and in French. Therefore it remains to be seen just when this practice began to enter into the English vernacular, and when all the evidence has been gathered, to endeavor to decide thru what channels and by what influence it came.

---

[22] Geoffrey of Monmouth's Historia Regum Britanniae ed. San Marte (A. Schulz), Halle, 1854.

[23] Lais of Marie de France, ed. Warnke in Bibliothek Normannica, Vol. III, 2d ed., 1900.

SECTION II. MORPHOLOGY.

Inasmuch as the pronoun of address shows a great number of variant forms for this period—the gen-poss. plur., for example, has over seventy forms, in all, counting variations in spelling and some forms which are probably errors—it will be advisable to consider under each case three groups, arranged according to their importance, as (*a*) common forms, (*b*) forms less common, and (*c*) miscellaneous forms due probably to scribal, editorial or typographical carelessness.[24] For the sake of convenience and because the O. E. distinctions have largely disappeared, the term genitive-possessive can be made to include both the O. E. gen. case and the pronominal adjective; and dative-accusative is quite sufficient, since no distinction of form existed, for the most part, even in late West Saxon. A new, distinct form, however, must be recognized, namely the so-called compound or intensive-reflexive form.

I. NOMINATIVE SINGULAR.

A. Common forms. 1. The most common form until about the middle of the century is *þu*. It predominates in 28 monuments and collections, notably B. Rule, Exp. Pat. Nos., Lamb. Hom., Trin. Hom., Kath., Marh., Jul., Prayers & Hymns, S. Warde, Hali M., Woh., Ancren R., Laȝ. A, R. Poems of C & J, Eg. Hymns, Prov. of A., O. & N., R. Poems of J, Kent. Serm., Fl. & Bl., Ass., G. G., Horn MS. C, Curs. M. MS. E, etc. In at least 13 others it occurs, particularly in Orm. (208x), V. & V. (57x), Laȝ. B (3x), South. Leg., Hav. (36x), Curs. M., Jos., etc. While it appears less frequently toward the end of the century it did not give way to the *þou* spelling until after 1300 A. D.

2. The spelling *ðu* is the regular one for V. & V. (340x), Metr. Credo, Gen. & Ex. and Best. It also occurs in B. Rule (once), Exp. Pat. Nos. (once), and Prayers & Hymns (6x). On the whole it is not a popular spelling because ð was not used as much initially as þ was.

3. The form *þou* occurs a few times in Laȝ. A (6x), Eg. Hymns

---

[24] While I realize that more careful editing, in the future, of certain monuments may make this third class largely obsolete, yet it seems best to print all the forms just as I have found them, trusting that they will not be taken too seriously by anyone.

(3x), Comp. Mar. (once) and Ass., that is to say, as early as 1225, but it does not predominate until about the time Laȝ. B was written and the pieces of Digby 86, about 1275, or perhaps a little earlier. After that it predominates in 26 monuments, the most important of which are Digby 86, Siriz, Thrush, Vox, B. & S. I, H. H., Psalter, Nor. Leg. I, Nor. Leg. II, So. Leg., Horn, Hav., Curs. M. (1632x), R. Glouc., Kil. Poems and Harl. 2253. The fact that it occurs in only two later pieces where it does not predominate, i. e., B. & S. II (16x) and Curs. M. MS. E (33x) shows how completely it did crowd out the earlier forms when it was adopted.

4. Forms showing assimilation of the initial spirant to a preceding *-t* or *-d* (e. g. Ancren R. 54, 20 wenest *tu*; O. & N. 218 *dostu*) occur frequently thruout the century and in all dialects, altho a very noticeable falling-off in the use of assimilated forms is to be noted in the latter part of the century. In Orm. *tu* occurs 429x, and *þu* follows *-d* or *-t* only 3x in a total of 208x, and in those 3 instances an intervening pause, caesural or otherwise, breaks the assimilating force of the preceding dental. In other important monuments of the period, all of which have a rather large number of forms with assimilation, the numbers of occurrences of *þu* or *ðu* immediately following dental explosives as compared with the total number of *þu* or *ðu* forms are as follows: V. & V. 42x in 340x, Kath. none in 71x, Prayers & Hymns, 16x in 84x, Hali M. once in 62x, Woh. 3x in 84x, Ancren R. 9x in 198x, Laȝ. A 176x in 651x, R. Poems of C & J 6x in 44x, R. Poems of J 22x in 115x, Fl. & Bl. 7x in 44x, Digby 86 ca. 8x in 80x, Psalter 143x in 475x, So. Leg. at least 400x in 1233x, Curs. M. at least 380x in 1632x, Harl. 2253 ca. 43x in 209x.

In general it is true that the form with assimilation, but not contracted with the preceding word, is more common in the earlier monuments, and the contracted form in the later ones. This doubtless is to be associated with the fact that earlier in the century forms with assimilation occur after *annd*,[25] *þat*, in fact, any word ending in *-d* or *-t*, whereas later the practice is usually confined to a pronoun after a verb in the 2nd pers. Among assimilated forms non-contracted forms prevail as follows: *tu* in Orm., V. & V., Kath., Marh., Jul., Prayers & Hymns, S. Warde, Hali M., Ancren R., Laȝ. A (3x), Best., Curs. M. (33x), Curs. M. MS. E (32x), etc.; *tou* predominates in Meidan M. only, tho it occurs also a less number of times in Psalter (31x), V Gaudia, Nor. Leg. II, B. & S. II, Curs. M. MS. E., R. Glouc. (once), etc. Of the contracted forms *-tu* is preferred in R. Poems of C & J (8x), Gen. & Ex.,

---

[25] In all quotations from the Orm. I shall print the word *annd* contrary to the practice of Holt, who prints only the sign used in the MS.

O. & N., R. Poems of J, Fl. & Bl., Ass. and Hav., occurring less often in Kath., Marh., Prayers & Hymns, Ancren R., Siriz (once), etc., while the later form *-tou* prevails in Psalter (58x), Nor. Leg. II, So. Leg. (4x), R. Glouc. (10x), Jos. (2x) and Kil. Poems (10x), and occurs occasionally in Meidan M. (8x), Digby 86 (once), Eust., Hav. (once), etc.

The question of whether actual contraction, in the sense that the bringing together of two words has crowded out a letter, really occurs, or whether it is merely a case of juxtaposition of verb and pronoun, cannot be settled in a general way but must be taken up for each monument separately because the answer depends upon what form the verb takes. If the verb of the 2nd sing. ends without exception in *-st* or *-t*, as in Lamb. Hom. or Trin. Hom., then a contraction would imply either that one dental has been lost or else that such contracted forms have been retained from a very early time when the *-es* conjugation was common; if, on the other hand, verbs in *-es* occur, as in Hali M., Ancren R., Gen. & Ex., Nor. Leg. I or Hav., then mere juxtaposition may have occurred. The fact that the form with assimilation, after about 1250 A. D., occurs almost altogether in contraction with verbs, and chiefly auxiliaries and the copula, as in *shaltou* (Hav. 1800), *artou* (So. Leg. 37, 267), *hauestu* (Horn 774), *wiltu* (Hav. 681), *has tu* (Curs. M. 20265), etc., makes it seem probable that such combinations are more or less fixed in the dialect and the assimilation is not the living process that it was earlier with Orm and the writers of the alliterative homilies and saints' lives. Indeed an examination of the assimilated forms in G. G., Psalter, Nor. Leg. I, Nor. Leg. II, So. Leg., B. & S. II, Horn and Hav. proves this quite conclusively.

The so-called assimilation after *-s* is not of much importance as far as the pronoun of address is concerned. In Hali M., Woh., and, as isolated occurrences, in the Psalter and Curs. M. the word causing assimilation is *as* or some part of speech other than a verb (e. g. Hali M. 25, 12 as *tu* turnest þin hond; Woh. 279, 10 as *tu* was; Psalter 20, 4 als *tou* es; Curs. M. 20657 It sal be al als *tu* it wille). In the Psalter and Curs. M. the verb and pronoun sometimes stand apart, making it appear that assimilation has followed a verb form in *-es*; it is quite likely in such cases that the scribe has merely separated a contraction from which a *t* has been lost after assimilation had taken place. The same appears to be true in the case of forms showing assimilation after *l* and *r*, not common, indeed, and confined largely to the same monuments, namely Psalter (e. g. 9, 35 sal *tou*; 58, 17 ere *tou*; 118, 31 nil *tou*) and Curs. M. (e. g. 20615 sal *tu*; 24194 er *tu*).

B. Forms less common. A few of the less frequent forms are characteristic of certain monuments only, others are variants occurring infrequently in various monuments, while still others might easily be relegated to the class of doubtful forms.

1. In the first group of special forms belongs *þouȝ*, the regular form in B. & S. II, and occurring also in So. Leg. 2x (26, 33; 39, 255).

2. A variant spelling of *þou*, namely *þov*, occurs in So. Leg. (370x). Another form, *þow*, is to be found less frequently in Nor. Leg. I and II, B. & S. II, Hav. (once viz. 845), Curs. M. (19x), Curs. M. MS. E and Kil. Poems (once). *Þv* occurs in Laȝ. A (once), R. Poems of J (3x), and *þw* in R. Poems of Digby 2 (once viz. 1, 29) and in Hav. (once viz. 1316). Gen. & Ex. has *ðhu* (3x) and *thouȝ* occurs in B. & S. II (5x). The modern form *thou*[26] barely appears late in the century in Laȝ. B (once viz. 24811), Psalter (3x), B. & S. II (once viz. 403), Hav. (2x viz. 560; 846), Harl. 2253 (once). Once, only, *thu* occurs, in P. P. (l. 8).

3. Several variants corresponding to the above, but with assimilated dental, occur scatteringly. B. & S. II has *touȝ* (once viz. l. 200) and *-touȝ* in contraction (4x). *Tow* occurs in Nor. Leg. I (once) and Nor. Leg. II (2x), *-tow* in Nor. Leg. II (7x), Hav. (once), R. Glouc. (3x), Kil. Poems (once), *-towe* in Nor. Leg. I (once viz. 1, 41), *-tov* in So. Leg. (4x) and Kil. Poems (2x), *-tw* in Nor. Leg. II (once viz. 7, 113).

4. In a few instances the pronoun has been contracted with a following word beginning with a vowel. In Fl. & Bl. (l. 335) the word *þert* is to be considered a contraction of *þu ert*, and similarly, in Harl. 2253 (W. L. 13, 38) *þart* = *þu art*. In Orm. the contraction *þut*[27] (= *þu it*) occurs 6x (2984 ȝiff *þut* lufesst ohht; 6192 ȝiff *þut* wast; 16383, etc.), and a form with initial *t*, i. e. *tut*,[27] 4x (4949 ȝiff þatt *tut* follȝhesst; 12236; 12242; 14123). Once in P. Mor. MS. E the contraction *þus* (= *þu hes*) occurs (l. 130 þanne *þus* ne miht do no more), and once in R. Glouc. a double contraction takes place (l. 4917 Sir bissop wu ne *ȝifstus* [= *ȝifst þu us*] of þine wite brede).

5. Forms which cannot be explained as merely variant spellings of more usual ones but which seem to represent careless pronunciation or colloquial tendencies are *þo and þe*. The former occurs in Laȝ. B (once viz. 14560), H. H. Digby MS. (once viz. 199), Nor. Leg. II (4x viz. 2, 59; 26, 185; 26, 192; 28, 117), So. Leg. (3x viz. 9, 1580; 19, 42; 27,

---

[26] While Hazlitt prints *þ* as *th* in Thrush, and Maetzner in Vox and V Gaudia, I have assumed that *þ* is always the correct letter, since all other pieces published from the same MSS. show *þ*.

[27] In Orm's MS. the vowel of this contraction is marked with a double accent.

1990), Horn MS. L (3x viz. 392, 566, 917) and Hav. (3x viz. 388; 1229; 1274) while the latter is printed *þe* in Laȝ. B (once viz. 21432 Li nu þar Colgrym *þe* were iclemde to heȝe = A *þu* were iclumben), in Nor. Leg. II (once viz. 35, 995 yf *þe* will þe gyf þar to, I sall it luf ay whis I lyf), in Horn MS. L (once viz. 757 Sone bote *þe* flecte = MS. C. Wel sone bute *þu* flitte), and in Kil. Poems (once viz. 2c, 63 *þe* worþ as witti . . . As god him self [28]), and *ðe* in V. & V. (once viz. 77, 12-13, Ʒif ðu ȝifst ðo manne ðe gaf ðe, oðer *ðe* wost ðat wile ȝiuen ðe, whilch lean aust ðu te hauen of godd [29]). All the examples of *þe* or *ðe,* however, are more or less questionable and may easily be mere scribal errors. The occurrence of the *-e*-form as an enclitic *-te* seems less questionable, in Trin. Hom. (once viz. 95, 33 haue reaðe of þin ogen sovle . þenne *likeste* gode), in Laȝ. B (once viz. 5195 ne *sehte* [30] leofne broþer = A. ne isihst *þu* leoue broder), in Fl. & Bl. (once viz. 519-20 A litel er þu noldest hit se, Nu ne *miȝte* hit lete fram þe), in Judas (2x viz. 19 *wolte* sulle þi louerd; 22 *wolte*), in So. Leg. (3x viz. 15, 365 ȝwi *fondeste* . . . To be-nime us; 38b, 10 Ʒwi *siweste* me so faste; 67, 18 Ypolyt, hou gez þis: *turneste* to þe wauȝh [31]), in Hav. (3x viz. 528 *wilte* don mi wille al; 578; 1135), and in R. Glouc. (2x viz. 3150 wat *waste* . . . ȝiue; 10791 Wat *seiste*). The form *-þe* is less certain because of confusion with the adverb *nouþe* in Laȝ. B (5058 and *nouþe* hart icomen aȝeo = A. nu þu ært sel icumen).

C. Miscellaneous forms. The form *gu,* which occurs in Gen. & Ex. 3x, is considered by the editor, Dr. Morris, and surely with justification, to be merely a scribal error for *ðu* (359 and 365-6. Louerd, quat same is me bi-tid, for ic am naked and have me hid. Quo seide ðe dat *gu* wer naked; ðu haues ðe sorges sigðhe waked; . . . In swinc ðu salt tilen ði mete [n], ðin bred wid swotes teren eten, Til *gu* beas eft in to erðe cumen, Quer-of *gu* beas to manne numen). Once *du* is printed in V. & V. (89, 4 [32]), *þa* occurs in B. Rule (once viz. 37, 14 [33]), *þeo* in Laȝ. A (4x viz. 2963 swiðe dure *þeo* eart me; 2975; 3047 *þeo* art me leof; 8911 þe wurs *þeo* [34] scælt iwurðen = B. þou salt dō worse), *þeou* in Laȝ. A (once viz. 2978), *þeu* in Laȝ. A (once viz. 3342), and *þon,* plainly an error, in Laȝ. B (once viz. 17990). The form *þue*, tho rare, is interesting as showing how far a scribe might go in adding inorganic *e*'s to words. It occurs in R. Poems of Digby 2 (2x viz. 2, 43; 2, 47). The form *stu* in V. & V. (103, 19 ȝieme woldest *stu* clepien to gode) is a good example of contamination by a preceding sound combination. Finally, once in Curs. M. *yow* appears to be an error for *þow* (MS. C 2718 þa said þat lauerd, i wil *you* min = MS. G i wil þu minne).

---

[28] Maetzner changes *þe* to *þou* (Sprachproben I, 1, 126).

[29] Perhaps *ðe* is rather a relative pronoun here.

[30] Madden suggests *sehste.*

[31] In the last example *-te* may be construed as reflexive obj. of the verb if a subject be supplied.

[32] Is Prof. Curme's *du* in his quotation of V. & V. 17, 18, in Jour. of Engl. and Germ. Phil. XII, 19, a more correct reading of Holthausen's text or a misprint?

[33] Schröer classifies this as a mistake in transcription and prints as *þu.*

[34] Here *þeo* might be construed as dative.

Of the 42 different forms, then, only 7 are to be regarded as common, 24 are either characteristic of isolated monuments only, or are chiefly orthographical variants of less frequent occurrence, while 12 are so rare as to be for most purposes considered negligible.

A comparison of the relative number of forms occurring in the various pieces will furnish a good index to the state of pronunciation and spelling in the different dialects and periods of the thirteenth century. The most important monuments show as follows, taken chronologically:

B. Rule 3 forms, Lamb. Hom. 1, Trin. Hom. 4, Orm. 4, V. & V. 6, Kath. 3, Marh. 3, Jul. 2, Prayers & Hymns 4, Hali M. 2, Ancren R. 3, Laȝ. A 7 and Laȝ. B 5, Gen. & Ex. 4, O. & N. 4, R. Poems of J 3, Best. 2, Kent. Serm. 1, Ass. 3, Digby 86 2, H. H. 4, Psalter 6, Nor. Leg. II 10, So. Leg. 7, B. & S. II 6, Horn (MS. L) 5, Hav. 10, Curs. M. 5, R. Glouc. 5, Kil. Poems 6, Harl. 2253, 3.

II. GENITIVE-POSSESSIVE SINGULAR.

In tracing the development of certain forms it will be convenient to divide the 63 monuments and collections roughly into three periods, viz. the period in which older forms persist, comprising Nos. 1-23, the middle period comprising Nos. 24-45, and the end of the century when Nos. 46-63 were, for the most part, written.

In Nos. 1-23 forms of the gen-poss. ending in *-n* (i. e. *þin, ðin*, exclusive of their inflected forms *þine*, etc.) occur before consonants 274x, before *h* 126x, before vowels 181x, absolutely 20x, postpositively twice; in Nos. 24-45 they occur before cons. 8x, before *h* 35x, before vowels 27x, absol. 11x, postpositively, none; in Nos. 46-63, before cons. 40x, before *h* 62x, before vowels 198x, absol. 27x, postpositively 6x. Since, however, these figures are influenced largely by the statistics for a few long pieces, such as Curs. M., more light will be thrown on the question of the use of these *-n*-forms by the fact that in the first period they occur oftenest before cons. in six different monuments, notably Lamb. Hom., Orm. and Gen. & Ex., in the second period in only Hymns of

CCCO., and in the third period in only R. Glouc. and P. P. From these figures it is evident that by the middle of the century the -*n*-forms were no longer used, as in older English, generally, but were placed for the sake of euphony before vowels and *h*, or as *thine* is used today, absolutely.

The shortened form (*þi*, *ði*) occurs in every important monument under consideration except B. Rule, which can hardly be called Middle English. It is almost always employed bef. cons. except in the later Northern monuments where it is used bef. *h* frequently and bef. vowels occasionally. It is found bef. *h* in Marh. (once), Ancren R. (once), G. G. (once), Psalter (109x), Nor. Leg. I (once), Nor. Leg. II (24x), So. Leg. (3x), Curs. M. (34x), Kil. Poems (3x), and bef. vowels in Prayers & Hymns (once viz. 202, 36 for *þi* owe sunfulle), in Psalter (once viz. 9, 33 uphoven be *þi* and [MSS. E and H have *hand*]), Nor. Leg. II (once viz. 33, 32), So. Leg. (2x viz. 60, 429; 66, 397) and Curs. M. (once viz. 3788 [35]).

For the entire period the occurrences of the -*n*-form and the short form, in the chief monuments, are as follows:

	þin, ðin, tin					þi, ði, ti		
	Bef. cons.	Bef. *h*	Bef. vowels	Absol.	Postpos.	Bef. cons.	Bef. *h*	Bef. vows.
1. B. Rule	3	1	..	..	..	..	..	..
2. Lamb. Hom.	15	2	6	1	..	2	..	..
5. Trin. Hom.	2	1	5	..	..	9	..	..
6. Orm.	174	52	30	..	..	13	..	..
7. V. & V.	21	11	17	1	..	5	..	..
8. Kath.	2	6	3	1	..	40	..	..
9. Marh.	4	1	8	..	..	51	1	..
10. Jul.	..	2	9	1	..	31	..	..
12. S. Warde	..	..	1	..	..	4	..	..
13. Hali M.	..	19	7	1	1	77	..	..
15. Ancren R.	1	4	19	6	..	49	1	..
19. Laȝ. A	4	9	33	1	1	100	..	..
22. Gen. & Ex.	40	3	3	1	1	5	..	..
24. O. & N.	..	1	7	2	..	31	..	..
26. R. Poems of J	..	5	1	..	..	20	..	..
27. Best.	1	1	1	..	..	2	..	..
29. Fl. & Bl.	..	1	2	4	..	14	..	..
35. Digby 86	1	4	2	..	..	28	..	..

---

[35] The fact that the -*n* of *þin* is occasionally found attached to a following word beginning with a vowel (cf. Psalter 30, 30 *þi nere;* Curs. M., frequently) seems to indicate that *þi* was regarded by the scribe as the natural form and the *n* as a transitional sound used to avoid hiatus and hence to be attached to either the preceding or the following word.

	þin, ðin, tin					þi, ði, ti		
	Bef. cons.	Bef. *h*	Bef. vowels	Absol.	Postpos	Bef. cons.	Bef. *h*	Bef. vows.
44. H. H.	..	3	3	..	..	6	..	..
46. Psalter	1	1	12	..	..	541	109	1
50. Nor. Leg. I	..	..	..	..	..	11	2	..
51. Nor. Leg. II	..	..	..	..	..	306	23	1
52. So. Leg.	..	10	44	1	..	277	3	2
53. B. & S. II	..	1	6	1	..	40	..	..
54. Horn C	..	1	5	..	..	33	..	..
55. Hav.	..	3	1	3	..	18	..	..
56. Curs. M.	22	19	94	14	6	706	34	1
58. R. Glouc.	23	6	16	4	..	70	..	..
59. Jos.	..	1	1	1	..	12	..	..
60. Kil. Poems	..	2	8	..	..	64	3	..
61. Harl. 2253	7	12	9	4	..	107	..	..

As will be noted farther on, in those pieces where *þin* is largely or altogether lacking (as e. g. Nor. Leg. I & II), *þine* is likely to appear bef. vowels. The use of *þi* absolutely or as a postpositive modifier is altogether unknown.

The so-called inflected form in *-ne* occurs in the first period (Nos. 1-23) bef. cons. 577x, bef. *h* 57x, bef. vowels 96x, absol. 5x, postpositively twice; in Nos. 24-45, bef. cons. 126x, bef. *h* 10x, bef. vowels 13x, absol. 12x, postpos. once; in Nos. 46-63, bef. cons. 122x, bef. *h* 23x, bef. vowels 73x, absol. 30x, postpos. 84x. Only one thing is really proved by these figures, namely, that the form in *-ne* occurs in a great majority of instances bef. cons. The increasing number of times that it is used absolutely does not mean much because this use is found chiefly in Nor. Leg. II (5x) and Curs. M. (16x). Likewise most of the examples of *þine* used as a postpositive modifier are to be found in the Psalter (77x) and are sheer Latinisms.

Since, then, the use of the *-ne* form cannot be explained from the standpoint of euphony, it is evident that the explanation must be sought elsewhere, either in the field of syntax which will be taken up later, or in that of rhythm.

A. Common forms. 1. The O. E. form *þin* predominates over any other one form in Orm. (227x), Eg. Hymns (7x), Hymns of CCCO. (10x), Max. (once) and Dream-Book (3x). It occurs, however, in all other monuments except Gen. & Ex., Best., Kent. Serm., Nor. Leg. I and II, and the smaller pieces P. Mor., Metr. and Prose Credos, Proc., P. P., Thrush, R. Poems of Digby 2, V Gaudia and Marina.

2. The short form *þi* prevails in P. Mor. (3x), Exp. Pat. Nos. (8x), Kath. (31x), Marh. (42x), Jul. (27x), S. Warde (4x), Hali M. (55x), Woh. (46x), Meiden M. (16x), Prose Credo (3x), R. Poems of C & J (19x), R. Poems of J (20x), Fl. & Bl. (14x), Comp. Mar. (10x), Ass. (8x), Digby 86 (28x), Siriz (19x), Eust. (9x), Thrush (7x), Prov. of Hend. (10x), G. G. (18x), Psalter (648x), R. Poems of Digby 2 (5x), Judas (2x), V Gaudia (6x), Nor. Leg. I (11x), Nor. Leg. II (340x), So. Leg. (282x), B. & S. II (40x), Horn (31x), Hav. (18x), Curs. M. (737x), R. Glouc. (70x), Jos. (12x), Kil. Poems (67x), Harl. 2253 (73x) and Marina (4x), and appears with increasing frequency in all other monuments except B. Rule (which has no short forms), Metr. Credo, Gen. & Ex., Best., Kent. Serm., Proc., P. P. and Max.

3. The third common form, *þine,* shows a plurality in B. Rule (11x), Lamb. Hom. (68x), Trin. Hom. (20x), Prayers & Hymns (75x), Ancren R. (125x), Laȝ. A (240x), Laȝ. B (211x), Prov. of A. (10x), Prov. of A. text K-W. (18x), O. & N. (48x), Kent. Serm. (once), Digby Psalter (6x), Vox (8x), B. & S. I (30x), H. H. (8x), and is found in all other monuments except P. Mor., S. Warde, Metr. Credo, Gen. & Ex., Best., Proc., Ass., P. P., Max., R. Poems of Digby 2, V Gaudia, Nor. Leg. I, and Dream-Book.

4. As in the case of the nom. sing., forms with assimilated dental are quite common, altho there is not the opportunity for bringing together an explosive and a spirant dental in the use of gen-poss. forms that there is in the nom. where inversion of verb and pronominal subject is so common. These forms of the gen-poss. occur first in Orm. as follows: *tin* (29x e. g. 685 tatt *tin* wif; 1300; 4418, etc.), *ti* (4x viz. 1607; 4436; 8944; 18818), and *tine* (4x viz. 154 ȝatedd *tine* beness; 684; 1481; 16201). In Orm., with two or three exceptions, these assimilated forms occur always after *-t* or the abbreviation for *and.* After Orm. *tin* occurs in V. & V. (2x), Kath. (3x), Marh. (3x), Hali M. (3x), Woh. (3x), Ancren R. (once), Gen. & Ex. (once), Best. (once), B. & S. II (once viz. 296 al was *tin*); *ti* occurs in Kath. (9x e. g. 314; 448), Marh. (10x e. g. 13, 4; 16, 9; 21, 33, etc.), Jul. (4x viz. 10, 14; 16, 10; 56, 4; 68, 1), Hali M. (after *-t* 15x e. g. 3, 7 forȝet *ti* folc; 15, 25, etc. —after *-d* once viz. 11, 14 hald *ti* nome—after *-s* 6x viz. 3, 23 as *ti* muð; 9, 6; 11, 2; 31, 14; 43, 21 þu marres *ti* meidenhad; 43, 22), Woh. (after *-d* or *-t* 7x e. g. 273, 22; 277, 31; 281, 31, etc.—after *-s* 3x viz. 269, 19; 273, 36; 275, 6), Ancren R. (7x, always after *-t* e. g. 98, 25; 100, 3, etc.), Meid. M. (once viz. 123 wend *ti* mod), G. G. (once viz. 4, 42, ine *ti* chilthing), Curs. M. (once viz. 20193 Quat es *ti* name); and *tine* oc-

curs in Kath. (once viz. 2069), Marh. (2x viz. 9, 30; 21, 3), Hali M. (3x viz. 3, 7; 3, 16), Woh. (2x viz. 273, 8 þu . . . lesedes *tine* prisuns; 281, 26 at *tine* finger neiles), Ancren R. (3x viz. 100, 27; 104, 4; 244, 6), Metr. Credo (once viz. 39 in hondes *tine* = in manus tuas), Best. (once viz. 209 sei ðu . . . to ðe prest sinnes *tine*), G. G. (once viz. 3, 57), V Gaudia (once viz. 53 Mit *tine* sone) and Curs. M. (2x viz. 2361 þou and *tine*; 2386). With a few exceptions, most of which have been especially noted above, the assimilation takes place after *-t*, or *-d*, or the abbreviation of *and*. Outside of Orm. most of the occurrences of assimilated forms of the gen-poss. sing. are in the southern alliterative homilies and saints' lives and Ancren R., all in the first quarter of the century. Laȝ. has none, and in all the other later monuments less than a dozen forms have been found.

B. Forms less common. 1. Forms spelled with initial ð are, as might be expected, confined to a very few MSS. *Þin* occurs predominantly in Gen. & Ex. (47x) and Best. (2x), also less commonly in V. & V. (39x), Prayers & Hymns (once), and Metr. Credo (2x); *ði* occurs in V. & V. (3x), Prayers & Hymns (once), Metr. Credo (2x), Gen. & Ex. (5x) and Best. (once); *ðine* prevails in V. & V. (108x) and is to be found less commonly in Prayers & Hymns (4x), Ancren R. (10x), Gen. & Ex. (3x) and Best (once).

2. Forms introducing the use of *y*, i. e. *þyn, þy* and *þyne* all occur in two MSS., Laud 108 and Harl. 2253, with two exceptions. *þyn* occurs in H. H. Harl. MS. (4x viz. 79; 156; 159; 198), Horn Laud MS. (2x viz. 1294; 1296), Harl. 2253 (10x), Dream-Book (once); *þy* occurs in H. H. Digby MS. (once viz. 190), H. H. Harl. MS. (2x viz. 71; 161), Horn Laud MS. (10x), Harl. 2253 (34x) and Dream-Book (once); *þyne,* less common, appears only in R. Poems of J (once viz. 1, 482 in *þyne* honde), H. H. Harl. MS. (4x viz. 120; 212; 240; 246) and in Horn Laud MS. (2x viz. 869; 871).

3. The later forms *thin* and *thi*[36] occur, in all, 9x, namely, *thin* in G. G. (once viz. 4, 27) and P. P. (2x viz. 5; 37) and *thi* in Psalter (3x viz. 20, 7; 44, 12; 118, 107), Nor. Leg. II (2x viz. 1, 373; 2, 508) and P. P. (once viz. 8).

4. A small but very interesting group of forms show the O. E. inflectional endings still in use. The masc-neut. gen. *þines* occurs in B. Rule (3x viz. 3, 5; 3, 6; 107, 18), Lamb. Hom. (6x viz. 11, 26; 17, 35; 21, 3; 37, 29; 39, 7; 51, 8), V. & V. (2x viz. 111, 1; 111, 8), Laȝ. A

---

[36] See note 26, page 29.

[37] Laȝ. B has *þine* in all these cases, or nothing.

(4x viz. 3517; 16546; 17958; 28605[37]) and *ðines* in V. & V. (4x viz. 39, 25; 109, 28; 109, 32; 111, 7). The masc. acc. *þinne* occurs in B. Rule (once viz. 37, 31), Ancren R. (once viz. 106, 28), Laȝ. A (9x viz. 5074 leoue *þinne* broðer; 11494; 13067; 13571; 16078; 22182; 12945; 13341; 18916[38]), Laȝ. B (once, 22650 of kensipe *þinne*), So. Leg. (2x viz. 9, 439; 55, 230), and *ðinne* in V. & V. (2x viz. 71, 14; 73, 6[39]). The fem. sing. gen. and dat. form *þire*, showing assimilation and absorption of the earlier *n* (O. E. *þinre*) occurs in B. Rule (once, 3, 7), Lamb. Hom. (2x viz. 21, 1; 33, 5), Prayers & Hymns (once, 199, 169), Laȝ. A (50x e. g. 8893; 11763, etc.[40]), Prov. of A. MS. J (once, 242), O. & N. MS. C (7x viz. 429; 914; 915; 1650—with *þine* in MS. J 1652; 1740; 1116), R. Poems of J (once, 6, 49) and once in Curs. M. where it is looked upon with suspicion by Morris, probably because it modifies a neuter noun (4313 Thoru *þire* [Morris prints *þine*] ei *þe* sal be sent A flam). A variant form *ðire* occurs in V. & V. (10x e. g. 83, 21; 97, 17; 113, 25, etc.) and in Prayers & Hymns (4x viz. p. 199, vv. 149, 154, 165, 168); also V. & V. has a Kentish form *ðiere* (once, 141, 27). In the rather archaic B. Rule the O. E. form *þinre* occurs (for the last time?) (6x viz. 3, 6; 3, 8; 5, 30; 5, 31; 9, 12; 17, 3). Of the older plur. forms *þinra* occurs in Lamb. Hom. (once, 111, 8 for þu ane ne brukest naut *þinra* welena), *þinum* in B. Rule (2x viz. 33, 26; 35, 8), and *ðinen*, a partially worn down dat. plur. in V. & V. (2x viz. 77, 21 Gif ðu him laust ani þing of *ðinen*; al swa ðu hafst aure idon bi alle *ðinen*).

The O. E. inflectional forms may be said to appear for the last time in southern England shortly after 1200 A. D. except the fem. *þire* which persisted until about the middle of the century, and *þine* which will be considered again in Sec. III.

C. Miscellaneous forms. 1. A unique form *hin*, instead of *þin*, in G. G. (once, 4, 11 Jhesu Crist, *hin* hertelith, was iqueint) is probably the work of some scribe who had trouble in pronouncing words having English þ.[41]

2. The short form *þi* is represented by *þe* in Curs. M. (4x) where the substitution is plainly an error on the part of a scribe, since the other MSS. have *þi* and the context demands it (3658; 5252 Sin i *þe* face, leue

---

[38] In the last three the MS. has *þine* but with the bar above the *i* to signify another *n*.

[39] The use and misuse of these forms will be considered in detail in Sec. III under Syntax of Gen-Poss. Sing.

[40] Laȝ. B substitutes for this form *þin* 10x and *þine* 28x.

[41] Jacoby cites (p. 15) a considerable number of instances where *h* and *þ* are interchanged in the 'Geistliche Gedichte.'

sun, ha sene; 12798; 26764[42]). This confusion is quite natural in some constructions where one may choose between a dat-acc. *þe* used as indir. obj. and possessive *þi*.

3. The longer form shows several unimportant variations, particularly *þane* in Laȝ. B (15859 Let cumen . . . Joram *þane* [A. *þine*] wittye), *þeine* in Laȝ. B (24956 *þeine* reades ne buþ noht agon), *þime* in Laȝ. A (3701 efter *þime* [B. *þine*] daie), *þhine* in Psalter (118, 8 *þhine* rightwisenesses I sal yheme in thoght[43]) and probably *þira* (perhaps *þina*, the MS. is not clear) in Laȝ. A (2988 for *þira* [B. *þine*] gretinge) and *þina* in Laȝ. A (1541 *þina* [B. *þine*] stepa main).

4. An inflected form *þinna* seems to be a mistake for *þinne* in B. Rule (once, 37, 5 forþyldiȝa *þinna* drihten), and *þirum* for a dat. plur. *þinum* in B. Rule (once, 17, 5 on *þirum* ȝinȝrum).

Of the 35 forms noted above only 6 are to be classed as common; 19 are less common, to be accounted for in four ways, namely, as due to a dialectal tendency to use ð initially, to the re-introduction of initial *th*, to the use of *y* instead of *i*, and to the persistence of O. E. inflectional forms; and the 10 miscellaneous forms, for the most part, are merely scribal errors which might easily be edited out of sight.

III. DATIVE-ACCUSATIVE SINGULAR.

1. The common form all thru the century is *þe*. In four monuments only is it supplanted by any other form, namely, in V. & V., Metr. Credo, Gen. & Ex. and Best. where *ðe* prevails. Even then *þe* occurs in V. & V. (30x e. g. 17, 21; 23, 27; 33, 3, etc.). Of the pieces where *þe* prevails *ðe* is also found in Lamb. Hom. (once viz. 135, 28), Trin. Hom. (3x viz. 9, 2; 21, 19; 29, 33), Prayers & Hymns (28x), and Ancren R. (4x viz. 12, 18; 26, 6; 40, 13; 40, 16).

2. The assimilated form *te* is quite common in the early part of the century, being found in Orm. (78x e. g. 151; 1214; 1446; 2808, etc.), V. & V. (15x e. g. 9, 31; 75, 18; 87, 19, etc.), Marh. (11x), Kath. (8x), Jul. (7x), Hali M. (22x), Woh. (7x), Ancren R. (21x), Meidan M. (once), Prov. of A. text K-W (2x viz. 524; 648), Best. (once, 181); in the second half of the century it occurs only in Comp. Mar. (once viz. 13), G. G. (2x viz. 1, 17 dred *te* nout; 4, 18), V Gaudia (once viz. 27), B. & S. II (once, 193), Cursor M. (19x e. g. 20185; 20362; 20687, etc.).

---

[42] On the other hand, in a few instances *þi* is just as clearly a mistake for the article *þe* (cf. 2568; 6859; 8652).

[43] According to Wendes' collation, p. 3.

Never as common as the assimilated form of the nom. sing., it grows less frequent later in the century.[44] It usually follows *-t*, less often *-d*, and occasionally *-s* or some other sound in V. & V. (after *-f* once viz. 87, 18 Ac ðu me drifst ut of *te*—after *-s* 2x viz. 75, 25; 111, 7 ær ðe deað hes *te* benime), Marh. (after *-s* once viz. 16, 17), Hali M. (after *-s* 4x viz. 9, 3; 41, 18; 43, 18 þu telles [B. *-est*] *te*; 47, 25—after *-m* once viz. 31, 15 went him *te* to weane [B he went hit]), Woh. (after *-s* 5x viz. 273, 31 aȝaines *te*; 275, 31; 283, 6; 275, 8; 275, 25), Meidan M. (292 Ði louerd haet igrete *te*), Best. (once after *-s* viz. 181), Comp. Mar. (after *-s* once viz. 13 childing pine haues *te* nou picht), G. G. (after *-s* once viz. 4, 18 as *te* behichte Simeon) and in Curs. M. (after *-s* 5x viz. 20074; 20289 quat es *te*; 20301; 20435; 20627—after *-l* 2x viz. 924 sal *te*; 20326). Never is the assimilated form of the dat-acc. to be found in contraction with a preceding word.

3. A few cases of contraction with following words occur, namely *þ-* in G. G. (3, 30 þe hosket, þat þe *þauet* bitaut) and in So. Leg. (9, 790 i segge *þit*), *þe-* in Orm. (2x viz. 5266 ȝiff þu lufesst mann, *þet*[45] birrþ Wiþþ gode dedess shæwenn; 6113), *te-* also in Orm. (2x viz. 5264 Forr ȝiff þu lufesst Godd, *tet*[45] birrþ Wiþþ gode dedess shæwenn; 18279) and *ðe-* in V. & V. (75, 23 to *ðeward*). The last example is unlike the others however in that no letter is lost in combining.

4. Forms suggestive of the modern spelling are *the*[46] in Prose Credo (1, 11), Hymns of CCCO. (1, 11), Psalter (144, 15), Judas (8), Nor. Leg. I (5x viz. 1, 231; 1, 386; 2, 169; 2, 275; 2, 505) and Nor. Leg. II (once viz. 23, 281); and *þee* in Laȝ. B (once viz. 3688) and Curs. M.[47] (once, 5201).

5. Two dialectal forms occur: *ðie* in Kentish V. & V. (once viz. 23, 31); and *þeo* in Laȝ. B (16081 hii *þeo* walleþ after teo) and in R. Poems of J (1, 138: *beo*).

6. The remaining forms are probably all due to scribal or typographical errors: *þa* in Curs. M. (1247), *ke* in Curs. M. (6243), *de* in Metr. Credo (35), *þo* in Laȝ. B (6235), and *þi* in Curs. M. (4x viz. 1177 But i sal seit on *þi* mi merk; 8326; 24651; 27483).

---

[44] While Cursor M. is apparently an exception to this statement, I am strongly inclined to believe that it should be dated much earlier than the position I have assigned to it in the order of monuments. It shows archaic forms not characteristic of late thirteenth-century northern dialect.

[45] These forms have a triple accent above the vowel in the Orm. MS.

[46] Regarding texts incorrectly printed with *th* see note 26, page 29. It would not be surprising if some of the examples cited here should prove to be misprints.

[47] In later MSS. of Curs. M. *þee* is a common spelling.

The total number of forms noted is 16; of these 3 only are at all common, 8 can be accounted for as resulting from rather common phonetic or special dialectal tendencies, while 5 are probably mistakes.

IV. INTENSIVE-REFLEXIVE SINGULAR FORMS.

Here, also, just as in the case of the gen-poss. form *þine*, the syntax of the pronoun must be settled before definite conclusions can be reached. Hence only forms can be summarized here and more conclusive results hoped for from the syntactical study of Sec. III. In general it may be said that the thirteenth century witnessed that change which made out of the older pronoun plus the intensive appositive (e. g. Laȝ. A 7336 *þu sulf* ært swiðe gripel) a new compound which acted as a grammatical unit. There were three distinct stages in the development of this new pronoun, namely, the early combination of any case of the simple personal pronoun with the intensive *self*, next the use of the dat-acc. form with *self* as a more or less distinct entity, and finally the modern combination of gen-poss. and *self*.

A. The older combination of nom. sing. and *self* occurs as follows: *þu sulf* in Laȝ. A (3x viz. 7314; 9825; 7336 quoted above) and in O. & N. (once, 497); *þu seolf* in Laȝ. A (3x viz. 3192; 16835; 17228) and in Laȝ. B (4x viz. 7314; 14941; 17938; 3192); and *þou self* in Curs. M. (once viz. 27960).

B. The forms having dat-acc. *þe* show three inflectional grades, viz., the uninflected, that with *-e* and that with *-en* (*-an*). 1. The uninflected forms are *þe self* found in Orm. (7x, spelled *sellf*, e. g. 1190; 1288; 4162; 4666, etc.), Hali M. (3x viz. 27, 14 þat tu *þeself* sulest; 29, 14; 35, 17), Woh. (4x viz. 271, 9; 273, 9; 279, 5; 287, 3), and Curs. M. (6x viz. 8639; 12804; 18278; 19576; 20954; 28638), *þe seolf* in MS. T of P. Mor. (once viz. 30[48]) and Hymns of CCCO. (once, 3, 18), *þe sulf* in Ancren R. (3x viz. 100, 12; 100, 18; 102, 16), *ðe self* in Gen. & Ex. (once, 934), *þa self* in Orm. (once viz. 5288), and, with assimilated dental, the forms *te self* in Orm. (after *t* 5x viz. 1252 arrt *te sellf*[49] aȝȝ milde; 1306; 9395; 10142; 11987) and in MS. R of Hali M. (once viz. 27, 1) and *te seolf* in Kath. (once, 2378) and in Marh. (once, 16, 31).

2. The forms inflected with *-e* show six variations: *þe sylfe* in B. Rule (once, 143, 14), *þe selue* in MS. C of Horn (once, 49) and in MS. E of Curs. M. (once, 19576), *þe seolue* in O. & N. (once, 1284), *þe solue*

---

[48] The later MSS. have *þi* instead of *þe*.

[49] Always spelled *sellf* in Orm.

in Exp. Pat. Nos. (once, 200), *þe sylue* in B. Rule (once, 125, 24) and *þæ seolue* in Laȝ. A (once, 15851).

3. The forms inflected with *-en* (*-an*) are 10 in number: *þe selfen*[50] in Orm. (31x e. g. 2450; 3748; 4859, etc.), *þe seolfen* in Lamb. Hom. (once, 27, 36), *þe sylfan* in B. Rule (once, 17, 5), *te selfen*[50] in Orm. (3x viz. 4469 þu skaþesst first *te sellfenn*; 5121; 6847), *þe seluen* in V. & V. (once, 37, 26), Woh. (6x viz. 271, 9 . 17 . 23; 277, 20 . 22; 285, 28) and Curs. M. (once, 5429), *þe selwen* in text K-W of Prov. of A. (2x viz. 547; 562), *þe seoluen* in Exp. Pat. Nos. (once, 40), Kath. (2x viz. 634; 1454), Marh. (3x viz. 4, 19; 7, 17; 19, 15), Jul. (3x viz. 26, 8; 56, 5; 60, 4) and in Laȝ. A (10x e. g. 5051; 9840; 13115; 17938; 25312, etc.), *þe suluen* in Ancren R. (once, 340, 12) and in Prayers & Hymns (once viz. 193, 66), *ðe seluen* in V. & V. (22x e. g. 23, 6; 41, 2; 49, 20, etc.) and in Gen. & Ex. (once, 1319), and *ðe suluen* in Prayers & Hymns (once, 195, 64) and in Ancren R. (once, 340, 12).

C. The forms compounded with gen-poss. *þi*, like the preceding ones, have the three inflectional grades. 1. The uninflected forms are found most frequently and in all dialects: *þi self* occurs in Digby 86 (2x viz. 35, 61; 35, 88), Psalter (2x viz. 50, 9; 101, 28), Nor. Leg. II (15x e. g. 1, 62; 1, 237; 14, 245; 34, 719, etc.), So. Leg. (2x viz. 27, 2032; 30, 43), Curs. M. (30x e. g. 1666; 8309; 16488; 26581, etc.) and in Harl. 2253 (once viz. W 1, 18); *þi seolf* is a Southern form found in Jul. (once, 22, 2), Prayers & Hymns (once, 202, 15), Laȝ. A (once, 17963), Laȝ. B (6x viz. 3192; 7314; 7336; 14941; 17938; 17963), R. Poems of J (once, 1, 350) and So. Leg. (2x viz. 15, 339; 48, 148); a Southern and Western form *þi sulf* occurs in Ancren R. (6x viz. 124, 9 . 16; 180, 17; 276, 16; 294, 11; 336, 16), Laȝ. A (once, 31097), So. Leg. (6x viz. 10, 194 . 379; 19, 42; 25, 57 . 154; 9, 1147) and R. Glouc. (3x viz. 1082; 4006; 4918).

2. The forms inflected with *-e* are 5 in number: *þi selve* in B. & S. II (once, 208), *þi seolue* in Laȝ. B (3x viz. 17899; 25312; 26386) and in R. Poems of J (3x viz. 1, 141 . 452 . 457), *þi silue* in Laȝ. B (once, 5051), *þi sulue* in Laȝ. B (once, 15851), So. Leg. (once, 59, 51) and R. Glouc. (2x viz. 3322; 6301), and *þy selue* in Harl. 2253 (once, G17, 82).

3. Three forms occur inflected with *-en*: *þi seluen* in Nor. Leg. II (2x viz. 16, 456; 23, 504) and in Curs. M. (4x viz. 4362; 4604; 10435; 25315), *þi seoluen* in MS. B of Kath. (once, 1454) and Laȝ. A (once, 17899), and *þi suluen* in Ancren R. (3x viz. 120, 1; 304, 10; 296, 18).

---

[50] Spelled *sellfenn* by Orm.

The fact that the intens-reflex. sing. is a phrase, or later even a compound, with the second element capable of inflection makes a greater number of variations possible than in some other forms of the pronoun. Of the 37 variations listed above the first 3 are dialectal variants of the older combination of pronoun intensified by a following adjective *self*. They occur rather early in the century except in Curs. M.[51] once.

The forms with dat-acc. *þe* are much more numerous and cover the period under consideration from B. Rule only down to about 1250 A. D. except, again, in Curs. M. and once in Horn, C text. It is to be noted, however, that even in this period of time two distinct phases of this second stage of development occur, one merely the older use of the intensive *self* with dat-acc. *þe* (e. g. Lamb. Hom. 27, 36 þu wreiest *þe seolfen*), the other the use of this combination as a distinct entity (e. g. Marh. 16, 31 ure cunde ant ure cun þat tu cost *te seolf* iseon). Since the question of use is involved here it is necessary to defer further examination of this group until Sec. III is reached. As to the relative occurrence of uninflected or inflected forms of the intens-reflex. sing. formed with *þe* the figures are as follows:

1. Uninflected. 7 forms in 11 pieces 36x.
2. Inflected with *-e*. 6 forms in 6 pieces 7x.
3. Inflected with *-en* (*-an*). 10 forms in 15 pieces 90x.

No special periods are observable for their use but they occur in most monuments before about the middle of the century and often two, occasionally all three, forms side by side in the same monument. For examples of pieces having two out of the three see B. Rule, Exp. Pat. Nos., Orm., Kath., Marh., Ancren R. and Gen. & Ex.; for all three, Laȝ.

The earliest form with gen-poss. *þi* found is *þi seoluen* in MS. B of Kath. (1454 to *þi seoluen*). Then a form with *þi* occurs in Jul., several in Ancren R. and Laȝ. A and in the second half of the century they practically exclude all others. Here also a distinction, syntactical in its nature, will be made farther on between those examples where *þi* modifies a substantive *self* and the more common ones where *þi self* is a grammatical unity.

The uninflected and inflected forms occur as follows:

1. Uninflected. 3 forms in 12 pieces 78x.
2. Inflected with *-e*. 6 forms in 6 pieces 13x.
3. Inflected with *-en*. 5 forms in 5 pieces 11x.

The above figures would seem to indicate a growing tendency to regard *self* as no longer an inflected adjective but rather as a part of a fixed pronominal form.

---

[51] See page 38, note 44.

For the rest, the minor variations of form are due either to phonological tendencies which are general (e. g. *te selfen* after a dental stop) or to dialectal tendencies (e. g. Southern *seolf,* Southern and Western *sulf*), or to orthographical peculiarities largely local or temporary (e. g. *ðe self, þe sylfe*).

It is worthy of remark that the two parts of the intens-reflex. combination with *þi* are occasionally written as one word in monuments of the second half of the century (e. g. B. & S. II, Curs. M.). This may be taken as additional evidence that the compound was at that time regarded as a grammatical entity, altho it is not safe to place too much stress upon this evidence since scribes were careless about spacing and since moreover this would be a point in which modern editors would be especially likely to err.

V. NOMINATIVE DUAL.

The nom. dual occurs in only 4 monuments, in 2 forms; a form showing Southern influence, *ȝet,* occurs in Laȝ. A (4x viz. 5618; 24990; 32147; 32163), and the regular O. E. form *ȝit* in Lamb. Hom. (once, 93, 5), Orm. (spelled *ȝitt,* 20x e. g. 4498; 6202; 12362; 13018, etc.), V. & V. (4x viz. 97, 24 . 26 . 27 . 31) and Laȝ. A (9x e. g. 5019; 5020; 5093; 9428, etc.). Laȝ. B replaces the nom. dual with *ȝe* or *ȝeo* and nowhere does it occur after the first quarter of the century.

VI. GENITIVE-POSSESSIVE DUAL.

The gen-poss. dual is more common than the nom. dual and shows more variation in form. Uninflected forms with the O. E. initial vowel are *incker* in S. Warde (once, 265, 32) and in Laȝ. A (once, 5102 *incker* moder = Laȝ. B *ȝoure*) and *inker* in Hali M. (2x viz. 3, 22; 31,18). The form *unker,* apparently due to confusion with the dual of the 1st pers., occurs in Laȝ. A (2x viz. 26541; 32170) and Hav. (once, 1882). An inflected form *inckere* occurs in Laȝ. A (once, 5623).

Especially interesting because they show that the dual had the same tendency as the oblique cases of the plur. to acquire an initial consonant ȝ (*g, y*) are the forms *ȝinker* which occurs in V. & V. (once, 97, 30 þat godd, *ȝinker* sceppend, mihte . . .), *ȝunker,* in Orm. (spelled *ȝunnkerr,* 11x e. g. 4497; 6204; 6210; 6217; 6244; 13019; 13045, etc.) and in V. & V. (2x viz. 95, 13; 97, 26), and *gunker* in Gen. & Ex. (once, 398).

With the exception of the isolated occurrences in Gen. & Ex. and Hav., the gen-poss. dual persists no longer than the nom. dual. In the 7 pieces noted, 7 forms occur only 23x (11x in Orm.). Yet in these few forms are manifest a tendency to confuse with the 1st pers. dual (probably because of their very lack of familiarity), a tendency to use inflectional *-e* and a tendency to adopt an initial consonant ȝ (*g*).

VII. DATIVE-ACCUSATIVE DUAL.

Much the same things are true of the dat-acc. dual. The O. E. form *inc* occurs in Marh. (once, 21, 33), Jul. (once, 18, 14), Hali M. (once, 11, 14), and Laȝ. A (7x viz. 5102; 5619; 5621; 5636; 18105; 32162; 32168). Two forms show the initial *h* (added so often to initial vowels in certain monuments of the South), namely, *hinc* in Lamb. Hom. (once, 93, 5) and *hunke,* with a superfluous final *-e* as well, in O. & N. (once, 1733-4 *Hunke* schal i-tide harm & schonde, ȝef ȝe [J has *we*] doþ griþbruche on his londe[52]). Five forms with initial consonant ȝ (*g*) occur, namely, *ȝinc* in V. & V. (once, 97, 30), *ȝing* in V. & V. (once, 97, 13), *ȝung* in V. & V. (once, 97, 26), *ȝunnc* in Orm. (20x e. g. 6207; 6228; 8663; 12363; 13012, etc.), and *gunc* in Gen. & Ex. (once, 2830). The form *hit* in Laȝ. A (5619 ich *hit* wulle freoiȝen) is probably a scribal error due to a confusion of *hinc* and nom. *ȝit.*

Like the gen-poss. dual, the dat-acc. shows a variety of forms quite out of proportion to the number of occurrences. Here also the cause is largely lack of familiarity with the dual, probably.

VIII. INTENSIVE-REFLEXIVE DUAL FORMS.

A single example of the intens-reflex. dual occurs in Laȝ. A (695 þu miht wel helpen *inc seluen*).

IX. NOMINATIVE PLURAL.

The nom. plur. forms, like those of the nom. sing., may be divided into three general groups according to their relative importance.

A. Common forms. 1. The most widely used form thruout the century is *ȝe*; it occurs exclusively in Kath. (37x), Marh. (7x), Jul. (27x), S. Warde (4x), Laȝ. A (172x), R. Poems of C (6x), O. & N.

---

[52] The fact that J has *we* instead of *ȝe* need not influence our decision regarding the person of *Hunke* since confusion of *y* and the letter 'wen' is common in the two MSS. (cf. Wells' ed., p. 153, note 57).

MS. C (8x), Fl. & Bl. (6x), B. & S. I (5x), Nor. Leg. I (17x), So. Leg. (420x), MS. C of Horn (9x), Jos. (26x), Harl. 2253 (8x), and in a number of other minor pieces, while it predominates in B. Rule (9x), Lamb. Hom. (71x), Orm. (59x), V. & V. (29x), Ancren R. (367x), Digby 86 (26x), R. Glouc. (127x), Kil. Poems (66x), etc. and occurs less often in Trin. Hom. (4x), Laȝ. B (77x), Nor. Leg. II (84x), Curs. M. (19x), etc.

2. The more modern form *ye* is next in importance, being used exclusively in Meidan' M. (6x), Prov. of A. MS. J (5x), R. Poems of J (49x), O. & N. MS. J (6x), Judas (2x) and Hav. (34x), predominating in P. Mor. MS. J (3x), Kent. Serm. (21x) and Horn MS. L (4x), and occurring less often in B. Rule (2x), Ancren R. (once), Gen. & Ex. (once), Psalter (20x), Nor. Leg. II (once), B. & S. II (once), Curs. M. (30x), and in Kil. Poems (once viz. 9, 16[53]).

3. Contrasting to the above form O. E. *ge* occurs predominantly in Trin. Hom. (23x), Gen. & Ex. (22x) and Best. (2x), and less frequently in B. Rule, Lamb. Hom. and K-W. text of Prov. of A.

B. Forms less common. Most of these are peculiar to single monuments and may in some cases represent the vagaries of individual scribes. A contracted form occurs in Orm. (3x viz. 3367 tær *ȝet*[54] muȝhenn findenn; 9006; 16693), *ȝee* occurs in Curs. M. MS. C (51x), a dialectal form *ȝie* in MS. T of P. Mor. (once) and in V. & V. (24x), *ȝeo* in Laȝ. B (54x), *yee* predominates in Curs. M. (577x), and *yhe* in Psalter (37x). A dialectal variant of the older form, *gie*, occurs in Trin. Hom. (4x) and in MS. E of Curs. M. (35x).

C. Miscellaneous forms. A seemingly curious form *ze* is printed in Horstmann's edition of Nor. Leg. II (104x). Whether this *z* is a phonetic variant of a strongly spirant ȝ or merely Horstmann's method of representing a peculiarly written ȝ could not be decided except, perhaps, by a careful examination of the MS. It is the work of the second scribe exclusively and begins with p. 19, l. 170 of Horstmann's edition.

The forms *hie* in V. & V. (135, 16 ff. Hec est enim uoluntas dei, san[c]tificatio uestra, 'Ðis is iwis godes wille,' he sade, 'þat *hie* ben hali'), *hye* in Kent. Serm. (28, 21) and perhaps *he* in Hav. (2207), are probably attempts to represent that Kentish pronunciation occasionally manifested in fourteenth-century monuments.[55] The remaining isolated forms are probably all mistakes rather than deliberate attempts to represent peculiar pronunciations. They are *ȝeu* in Kil. Poems (1, 39), *jȝe* in R. Glouc. (9360) and *þe* in Digby 86 (38, 229) and in Psalter (112, 1 Name of laverd herihe *þe*).

---

[53] Written in later ink.

[54] In the MS. *e* is written with a double accent mark in each instance.

[55] Cf. *yhe* in Wars of Alexander, Dublin MS. ll. 1034; 1801; 1866 (ed. Skeat) or Pricke of Conscience ll. 68; 400; 4046, etc. (ed. Morris).

Excluding those forms which are peculiar to certain monuments only or which occur as isolated forms, there remain only the three common forms *ge*, *ȝe*, *ye*, illustrating the development of the modern form from the O. E. The older form *ge* occurs last in Gen. & Ex. and Best., not later than about 1250 A. D., the transitional form *ȝe* is common at all times, while the modern form *ye* does not appear to any extent until about 1250 A. D.[56]

X. GENITIVE-POSSESSIVE PLURAL.

The gen-poss. plur. shows 71 different forms, phonetic and orthographical. These fall into two great groups and one small one, namely, those beginning with a vowel and those with initial *g*, *ȝ* or *y*, and those few newly developed absolute possessives ending in *-s*. Each large group must be subdivided into uninflected and inflected or *-e*-forms,[57] altho a careful analysis of the forms is not possible until their use in the sentence shall have been examined in Section III.

A. There are 35 different forms beginning with a vowel, found for the most part in the earlier half of the century and in the Southern and Western monuments.

I. Uninflected forms. 1. The most common forms are *ower* found in Exp. Pat. Nos. (once, 221), Lamb. Hom. (6x e. g. 12, 23; 29, 10; 33, 18, etc.), Trin. Hom. (2x viz. 17, 25; 21, 10), *Kath.[58] (17x e. g. 1263, 1398, etc.), *Marh. (2x viz. 23, 10; 6, 16), *Jul. (10x e. g. 18, 1; 22, 14; 72, 13, etc.), *Ancren R. (91x e. g. 112, 27; 188, 6; 356, 30), MS. C of O. & N. (3x viz. 1685; 1699; 1736), Fl. & Bl. (once, 534), Ass. (3x viz. 194; 207; 208), So. Leg. (20x e. g. 27, 2044; 36, 400; 40, 177, etc.), MS. C of Horn (once, 978) and R. Glouc. (4x viz. 10285; 10310 twice; 11710), *eower* in B. Rule (2x viz. 5, 18 . 19), *Lamb. Hom. (18x e. g. 13, 30; 105, 21; 145, 27, etc.), *Laȝ. A (18x e. g. 12491; 21453; 29866, etc.) and So. Leg. (9x e. g. 15, 87; 21, 40; 56, 262, etc.),

---

[56] The earlier occurrences in B. Rule and Ancren R. are so few as to be suspiciously like misprints.

[57] Since the one occurrence of an *-n*-form (*eowran*) is in B. Rule, an essentially O. E. piece, it is not necessary to make a third subdivision in *-n* as was the case in the intens-reflex. sing.

[58] The form under discussion predominates whenever a monument is starred.

eouwer in Laȝ. A (16x e. g. 13836; 16454; 2284, etc.) and in So. Leg. (12x e. g. 9, 835; 20, 132; 55, 122, etc.) and *ouwer* in Ancren R. (18x e. g. 116, 2; 148, 4; 186, 12; 192, 16, etc.) and in *So. Leg. (46x e. g. 9, 552; 15, 169; 27, 479, etc.).

2. Less common are the monosyllabic forms *or* in Harl. 2253 (3x viz. W 6, 17 twice; G 2, 39) and Marina (once, 2) and *our* in Ancren R. (17x e. g. 64, 18; 80, 19; 92, 25, etc.) and in Laȝ. B (once, 10608).

3. Other less common forms, mostly orthographical variants of the above, are: *eouer* in Laȝ. A (once, 1053), *eovwer* in So. Leg. (2x viz. 27, 1011; 29, 103), *eur* in MS. J of O. & N. (once, 1699) and R. Poems of J (4x viz. 1, 319 . 370 . 425 . 428), *euwer* in Lamb. Hom. (4x viz. 11, 25; 13, 21 . 27 . 27), *ovwer* in So. Leg. (once, 27, 2071), *owr* in Ancren R. (2x viz. 10, 8; 186, 7) and *owur* in Ancren R. (2x viz. 190, 10; 216, 27).

4. Four forms occur which vary more markedly from the common ones, namely, *æouwer* in Laȝ. A (once, 27217), *æuwer* in Laȝ. A (once, 20763), *eorwer* in Laȝ. A (2x viz. 5771 [59]; 21436), and *eour* in Lamb. Hom. (once, 15, 32).

II. Inflected forms. 1. The most common inflected forms, corresponding only in part to the common uninflected ones, are, in order of importance: *oure,* found in Ancren R. (9x e. g. 50, 19; 64, 15; 266, 6, etc.), Meidan M. (3x viz. 1; 2; 131), Laȝ. B (6x e. g. 7906; 9502; 15252, etc.), R. Poems of C (2x viz. 22, 68; 23, 4), MS. J of O. & N. (once, 1685), *Digby 86 (3x viz. 231; 328; 333), Eust. (once, 93), B. & S. I (once, 37, 4 [60]) and B. & S. II (once, 407), *eure,* in the Jesus Coll. MS. only in R. Poems of C & J (2x viz. 22, 68; 23, 4), Prov. of A. (2x viz. 28; 33), O. & N. (once, 1736) and R. Poems of J (5x viz. 1, 339 · 371; 3, 309 · 314; 4, 52), *eoure* in Laȝ. A (11x e. g. 5440; 15252; 19532; 20603, etc.), R. Poems of C (once, 25, 90) and So. Leg. (2x viz. 20, 127 . 138), and *eowre* in B. Rule (once, 5, 4), Lamb. Hom. (once, 91, 14) and Laȝ. A (16x e. g. 7906; 9502; 10608; 12502, etc.).

2. Much less common are the trisyllabic forms where inflectional *-e* is added to the uninflected forms noted above, but without syncopation. These are *eouwere* in Laȝ. A (once, 19539) and in So. Leg. (2x viz. 15, 171; 21, 36), *eowere* in B. Rule (once, 85, 13), *evwere* in So. Leg. (once, 59, 28), *ouwere* in So. Leg. (2x viz. 28, 70; 56, 209), and *owere* in So. Leg. (once, 9, 388).

---

[59] Madden says, "A correction has been imperfectly made by two successive hands, on an erasure."

[60] In 4 other instances *oure* is ambiguous but probably in the first person (41, 4; 43, 2 thrice).

3. Other less common forms are phonetic or orthographical variants of the more common dissyllabic forms or else merely inflected forms of the monosyllables. These are *eore* in Lamb. Hom. (once, 91, 13) and Laȝ. A (4x viz. 4413; 6254; 13392; 19175), *ore* in Laȝ. A (once, 5874), *ovre* in So. Leg. (once, 27, 2085), *owre* in Ancren R. (once, 32, 1), and *houre*, with 'Cockney' *h*, in Eust. (once, 254 Were suldich *houre* fere be?).

4. A single form with inflectional *-n*, *eowran*, occurs in B. Rule (once, 59, 24 Đeowiað *eowran* drihtne mid eȝe).

5. The remaining miscellaneous forms are *æure* in Laȝ. A (once, 32173), *æoure* in Laȝ. A (once, 6746) and *eoweore* in Laȝ. A (once, 7894).

B. The forms of the gen-poss. plur. beginning with a consonant *g*, *ȝ* or *y* (aside from the few absolutes ending in *-s*) are 33 in number. They occur in all dialects and thruout the entire period under consideration. Like those of the preceding general group, they may be subdivided into uninflected and inflected or *-e*-forms. Like the nom. plur., the forms of the gen-poss. plur. show a gradual shifting from an earlier *g* thru a transitional *ȝ* to a modern *y*.

I. Uninflected forms. 1. Six forms with *g-* occur in three different monuments of the early century, namely, *giuer* in Trin. Hom. (once, 117, 8), *giuor* in MS. E of Curs. M. (2x viz. 19158; 19334), *giur* in *MS. E of Curs. M. (14x e.g. 19019; 19105; 19252, etc.), *giuwer* in Trin. Hom. (once, 71, 18), *giwer* in *Trin. Hom. (9x e.g. 65, 22; 79, 11; 113, 9, etc.) and *gur* in Gen. & Ex. (once, 2260).

2. Six uninflected forms with *ȝ* occur, namely, *ȝeuer* in *V. & V. (8x e. g. 45, 5; 69, 11; 79, 23, etc.), *ȝewer* in V. & V. (7x e. g. 5, 32; 135, 21; 139, 17, etc.), *ȝour* in MS. C of Horn (once, 871), Curs. M. (2x viz. 782; 784), R. Glouc. (2x viz. 2658; 4035) and Kil. Poems 2x viz. 8, 73-74), *ȝowr* in Nor. Leg. II (once, 2, 322), *ȝuer* in V. & V. (once, 7, 22) and *ȝur* in *Kil. Poems (27x e. g. 1, 19; 8, 37; 8, 99, etc.).

3. The forms with initial *y* (*yh*) which occur in the second half of the century are: *your* in *Psalter (14x e. g. 4, 5; 23, 7; 80, 4, etc.), B. & S. II (once, 405), *Curs. M. (112x e. g. 1996; 2899; 4881; 6138, etc.) and in MS. E of Curs. M. (2x viz. 22648; 23707), *yhour* in Psalter (once, 113b, 14), *yor* in MS. E of Curs. M. (once, 23082) and *yur* in Curs. M. (63x e. g. 5875; 13219; 15262, 15411, etc.).

4. Once, in Nor. Leg. II, Horstmann prints the form *zow*[*r*] which, like the nom. *ze*, contains a perplexing *z* (34, 187 And I sall gif zow for *zow*[*r*] dede Full riche giftes untill zowre mede).

II. Inflected forms. 1. The only inflected forms representing the earlier or *g*-stage are *giure* in Trin. Hom. (2x viz. 115, 18; 203, 23) and *gure* in Trin. Hom. (3x viz. 5, 19; 17, 8 twice) and in *Gen. & Ex. (11x e. g. 404; 2352; 3817, etc.).

2. The most common inflected form with transitional ȝ is *ȝoure,* found in *Laȝ. B (37x e. g. 4413; 19175; 19539, etc.), *Prov. of Hend. MS. C (once, 46, 2), Nor. Leg. I (4x viz. 2, 109; 2, 418 twice; 2, 628), Nor. Leg. II (10x e. g. 2, 51; 7, 398; 10, 37, etc.), Horn MS. C (once, 870 Al þis lond beo *ȝoure*), *R. Glouc. (47x e. g. 2201; 2444; 8174; 9339, etc.), *Jos. (13x e. g. 343; 378; 465, etc.) and Kil. Poems (once, 3, I, 35). Next in frequency is *ȝure,* used in *Orm. (43x e. g. 254; 945; 1117; 2911, etc.), V. & V. (3x viz. 11, 6; 19, 16; 61, 29), Prov. of A. text K-W (4x viz. 15; 28; 33; 42[61]), Laȝ. B (once, 27217) and Kil. Poems (8x e. g. 5, 163; 7, 185; 8, 45, etc.). Other forms occurring in single pieces only are *ȝeuere* in V. & V. (once, 79, 23), *ȝeure* in V. & V. (14x e. g. 21, 23; 41, 29; 69, 23, etc.), *ȝewere* in V. & V. (2x viz. 45, 6; 51, 26), *ȝowre* in Nor. Leg. II (10x e. g. 1, 39; 6, 115; 7, 235, etc.), and *ȝyure* in MS. L of Horn (once, 872).

3. The later or *y*-forms of the inflected gen-poss. plur. are *youre* in Psalter (4x viz. 33, 6; 47, 14; 57, 3 . 10), Nor. Leg. II (2x viz. 1, 360; 7, 232) and Hav. (5x viz. 1416; 2067; 2211; 2248; 2801), *yhoure* in Psalter (once, 68, 33), *yowre* in Nor. Leg. II (3x viz. 1, 396; 7, 142; 7, 365) and *yure* in *Kent. Serm. (4x viz. 28, 22 twice; 32, 4; 35, 11) and in Hav. (once, 171).

4. Three peculiar forms are printed in two different monuments, namely, *woure* in Laȝ. B (once, 26541[62]), *zoure* in Nor. Leg. II (5x e. g. 35, 801; 35, 968; 35, 1032) and *zowre* in *Nor. Leg. II (28x e. g. 19, 251; 22, 331; 23, 126, etc.).

C. The possessive absolute ending in -s. Three forms occur, all with initial *y*-: *yours* in Curs. M. (2x viz. 5058 Mi fader coth he fars well i watte, Knauing of *yours* haue i nan; 17340 And als yee said it sal i wene On yow and *yours* bath be sene), *yurs* also in Curs. M. (2x viz. 2068; 15409) and *youres* in Hav. (3x viz. 2798 Leuedi, Kristes ore And *youres*; 2800-01 For England auhte for to ben *youres,* and we youre men and *youres*[63]).

Of the monuments and collections having the forms with initial vowel all are of the first half of the century, probably, except So. Leg., R. Glouc. and Harl. 2253; those forms with initial *g*- all occur in Trin. Hom., Gen. & Ex. and MS. E of Curs. M., before or rather close to 1250

---

[61] According to Skeat's collation; Morris prints *gure* (3x).

[62] The A-text has *unker.*

[63] Skeat drops from his text the last two words.

A. D.; those with a transitional ȝ- are scattered thruout the century from V. & V. to Kil. Poems; finally, the forms with modern *y*- occur after the middle of the century and largely in northern monuments.

The uninflected and inflected or -*e*-forms are quite evenly divided thruout the century. Only the uninflected forms occur in Kath., Jul., Ass. and Curs. M., of the more important monuments, while, on the other hand, only the inflected forms are used in Orm., R. Poems of C & J, Prov. of A., Kent. Serm., Digby 86, Nor. Leg. II (except *ȝowr* once, and *zow*[*r*]), Hav. and Jos.

Some idea is gained of the unsettled state of the gen-poss. plur. form of the pronoun of address by noting that of the larger pieces only 7 are content with a single form; on the other hand Laȝ. A has 14 (Laȝ. B but 4), Nor. Leg. II, 8, Ancren R., 7, V. & V., 7, Lamb. and Trin. Hom., each 6, So. Leg. 5, R. Poems of C & J (2 MSS.), O. & N. (2 MSS.), Psalter and Kil. Poems, each 4, while the rest have at least 2 or 3 forms, each.

XI. DATIVE-ACCUSATIVE PLURAL.

The dat-acc. plur. forms, 49 in number, may be divided in much the same way as the gen-poss. plur. The older forms with initial vowel persist thruout the century, but gradually yield to forms with an initial consonant which is written successively *g*, ȝ, *y*.

A. Forms with initial vowels. 1. The most important are *eow* in *B. Rule (7x), MS. T of P. Mor. (3x), Exp. Pat. Nos. (once), Lamb. Hom. (15x), Trin. Hom. (4x) and *Laȝ. A (46x), *eou* in B. Rule (once), *Lamb. Hom. (24x), Laȝ. A (36x), R. Poems of C (2x) and So. Leg. (44x), *eu* in P. Mor. MS. J (3x), Trin. Hom. (3x viz. 17, 27; 19, 10; 21, 11), V. & V. (2x viz. 59, 23; 71, 28), MS. J of Prov. of A. (once, 214), O. & N. MS. C (once, 1793), *O. & N. MS. J (8x), *R. Poems of J (32x) and So. Leg. (once, 66, 208), *ou*, most popular of all, in Lamb. Hom. (5x), Trin. Hom. (2x), *Ancren R. (230x), *Meidan M. (4x), Laȝ. A (2x viz. 725; 1519), Laȝ. B (24x), R. Poems of C (2x), Prov. of A. MS. J (once), O. & N. MS. J (once), R. Poems of J (once), *Digby 86 (10x), *Siriz (2x), *Digby Psalter (3x), *Vox (3x), So. Leg. (44x), *Harl. 2253 (15x), etc., and *ow* in Lamb. Hom. (4x), Trin. Hom. (once, 17, 8), *Kath. (21x), *Marh. (4x), *Jul. (9x), *S. Warde (11x), *Hali M. (2x), R. Poems of C (2x viz. 22, 70-71), O. & N. MS. C (6x) and R. Glouc. (once, 4829).

2. Less common variants of the above forms are *eo* in Laȝ. A (3x viz. 13486; 26514-15), *eov* in *So. Leg. (116x), *ev* in R. Poems of J

(once, 1, 650), *ew* in Trin. Hom. (3x viz. 17, 8; 33, 1; 217, 28), *ov* in O. & N. MS. C (2x viz. 114; 115) and in So. Leg. (45x e. g. 10, 140; 27, 523; 35, 612, etc.); and the forms with initial *h*, viz. *heou* in Lamb. Hom. (once, 39, 32), *heow* in Lamb. Hom. (2x viz. 13, 31; 49, 2), *hou* in Digby 86 (once, 35, 10), in Laȝ. B (2x viz. 7905; 9009) and in MS. D of B. & S. I (once, 36, 3) and *how* in Lamb. Hom. (once, 53, 28).

3. Miscellaneous forms. Two are orthographic, probably, as they vary from the ordinary forms merely in having a final *-e*; they are *eowe* in Laȝ. A (13232) and *owe*[64] in R. Glouc. (once, 10291 ȝe mowe me makie suerie wat *owe* wille be). The other three, either representing dialectal pronunciations or scribal errors, are *æu* in Laȝ. A (once, 4556), *ewȝ* in V. & V. (once, 41, 32) and *oeu* in Laȝ. A (once, 745).

B. Forms with initial consonant g, ȝ, y. 1. Only 3 forms with initial *g* occur, namely, *geu* in Trin. Hom. (once, 17, 2), *giu* in *Trin. Hom. (21x) and *MS. E of Curs. M. (23x) and *gu* in *Gen. & Ex. (26x).

2. Of the 13 forms with transitional *ȝ* the most common are *ȝou* in *Laȝ. B (47x e. g. 915; 5460; 19334, etc.), *Fl. & Bl. (once), *Ass. (4x), Nor. Leg. I (4x viz. 1, 184 . 308 . 370; 2, 217), So. Leg. (once, 56, 198), *Horn (6x), *R. Glouc. (36x e. g. 1632; 2201; 2445, etc.), *Jos. (13x) and Kil. Poems (21x), *ȝow* in *Nor. Leg. I (11x e. g. 1, 98; 1, 183; 2, 419, etc.), *Nor. Leg. II (38x e. g. 1, 137; 2, 156; 3, 126, etc.) and R. Glouc. (2x viz. 215; 428), *ȝu* in *Woh. (once, 285, 6) and in Prov. of A. text K-W (2x viz. 29; 214[65]) and *ȝew* in V. & V. (13x e. g. 15, 9; 21, 17; 27, 31, etc.) and *Proc. (2x). Forms less common are *ȝeou* in So. Leg. (once, 66, 9), *ȝeov* in So. Leg. (2x viz. 46, 497; 66, 545), *ȝeow* in Laȝ. A (once, 5453), *ȝeu* in *V. & V. (24x), *ȝiu* in Trin. Hom. (9x e. g. 187, 29; 193, 24; 195, 14, etc.), *ȝo* in MS. M of P. Mor. (4x viz. 147; 149; 209; 214), *ȝowe* in Nor. Leg. I (2x viz. 1, 84; 1, 339) and *ȝuw* in Orm. (169x).

3. There are 9 variations of the form with initial *y* (*yh*), namely, *you* in Psalter (4x viz. 4, 5; 33, 12; 117, 26[66]; 126, 2), Horn MS. L (once, 3), *Hav. (26x) and Curs. M. (13x e. g. 9298; 11866; 12094, etc.), *yow* in Nor. Leg. II (7x e. g. 6, 116; 7, 488; 16, 319, etc.), Hav. (once, 160) and in *Curs. M. (342x), *yhou* in Psalter (5x viz. 113b, 14 . 114; 118, 115; 128, 8; 135, 3), *yhow* in Nor. Leg. II (once, 16, 667), *youu* in Curs. M. (6x viz. 13047; 13481; 14648; 15445; 15447;

---

[64] Probably a mistake for *ower*.

[65] According to Skeat's collation; Morris prints *gu*.

[66] According to Wende's collation; Stevenson prints *þou* for MS. C and *ȝhou* for MS. H.

22086), *yov* in Curs. M. MS. E (once, 22714), *yu* in Kent. Serm. (2x viz. 29, 17; 33, 27) and in Curs. M. (once, 12095), *yuu* in Curs. M. (10x e. g. 20248; 20256; 20422, etc.[67]) and *yw* in Kent. Serm. (2x viz. 32, 19; 35, 10) and in Hav. (once, 453).

4. Miscellaneous forms. In Nor. Leg. II occur three forms with printed initial *z*, namely, *zo* (2x viz. 23, 17; 24, 203), *zou* (once, 23, 354) and *zow* in *Nor. Leg. II (62x e. g. 19, 209; 21, 114; 23, 109, etc.). Two forms occur in the Psalter which are probably due to scribal carelessness, *þou* (once, 128, 8 Blisse of laverd *þou* to mede = Benedictio Domini super vos) and *yhe* (once, 65, 16 Comes and heres, and I sal telle al *yhe* þat dredes God, what to mi saule dide he); Laȝ. B has *wou* (once, 26542[68]).

No forms with initial *g* occur later than Curs. M. MS. E, while the earliest *y*-forms occur in Kent. Serm. and the rest are for the most part in Northern monuments. The forms with initial vowel persist in the South and West, while the consonant forms are found in Kentish MSS. and in the Northern monuments, chiefly. Of the monuments containing only forms with initial vowels the most notable are Lamb. and Trin. Hom., V. & V., alliterative saints' lives and homilies, Ancren R., Laȝ. A (except *ȝeow* once), all pieces of the Jesus Coll. MS. (O. & N., etc.), all pieces of MS. Digby 86 and of Harl. 2253. The chief monuments having only forms with initial *g*, *ȝ* or *y* are Orm., Gen. & Ex., Prov. of A. text K-W, Best., Kent. Serm., Ass., Psalter, Nor. Leg. II, Horn. Hav., Curs. M. and Kil. Poems, mostly Kentish, Midland or Northern pieces.[69]

While more monuments are content with a single form of the dat-acc. plur. than of the gen-poss. (cf. Orm., alliterative saints and homilies, Ancren R., Gen. & Ex., Best., Harl. 2253, etc.), yet some show a goodly number of forms, particularly Trin. Hom., Laȝ. A and So. Leg., each with 8 forms, Lamb. Hom. and Curs. M., each with 7, Nor. Leg. II with 6, R. Glouc. with 5, etc.

If as Diehn[70] believes, following the lead of Sweet, Morsbach and others, the initial consonant *g*, *ȝ* or *y* is a development of the earlier *eo*, it must have had a precarious existence for the first hundred years, since the vowel-beginning form showed such persistence as we have noted above. The fact that the dual also developed a *g* or *ȝ*, generally before *u*, makes it seem probable that both dual and plural were strongly influenced by their nominative forms and that while the dual disappeared at an early date, this influence kept at work on the oblique cases of the plural until the forms with initial vowels were crowded out. Still the fact cannot be ignored that in certain forms such as *ȝeow, ȝeov, ȝeou, ȝeu, ȝiu,* etc., the initial consonant may be explained as the result of an extremely palatal initial vowel. The most probable explanation is that the new forms of the oblique cases are due to analogy with the nominative and the phonetic possibilities inherent in the *eo.*

---

[67] Occurs only between lines 15330 and 20463 except once viz. in l. 7971.

[68] Laȝ. A has the dual *inc*.

[69] In one piece, Ass., the gen-poss. plur. is always *ower* and the dat-acc. always *ȝou*.

[70] Diehn, Die Pronomina im Frühmittelenglischen, p. 35.

XII. INTENSIVE-REFLEXIVE PLURAL FORMS.

The 34 forms of the intens-reflex. plur. show the variations both of the intens-reflex. sing. and of the dat-acc. plur. The three combinations appear in succession, i. e., nom. with intensive *self,* dat-acc. with *self,* and finally gen-poss.; likewise the three inflectional grades are present in the plur. forms; and finally, the development of the initial *g, ȝ, y,* is to be traced just as in the simple dat-acc. plur. The conclusions reached cannot be quite as sure for the plural, however, as for the singular, because the number of occurrences is not nearly as great.

A. The older combination of nom. plur. and the intensive is found in the uninflected forms *ȝe seolf* in Laȝ. A (once, 15051 hældeð *ȝe seolf* eowre lond) and the later *yee-self* in Curs. M. (2x viz. 6096; 14691) and in the inflected or *-en* (*-in*) forms *ge seluin* in MS. E of Curs. M. (once, 19094), *ȝee-seluen* in Curs. M. MS. C (once, 780) and *yee-seluen,* also in Curs. M. MS. C (2x viz. 6786; 19094).

B. The combination of dat-acc. plur. with *self* prevails thruout the century; it appears in 26 variant forms, with the three inflectional grades of *self* and the four stages of development of the first element.

I. Uninflected forms. 1. In the early stage of development are *eov-seolf* in So. Leg. (once, 47, 357), *eov-sulf* also in So. Leg. (once, 21, 38), *ou self* in Digby 86 (once, 38, 318) and Harl. 2253 (once, W 5, 60), *ou sulf* in Ancren R. (6x viz. 22, 21; 46, 9; 92, 22; 106, 6; 186, 28; 226, 19) and *ow seolf* in Marh. (once, 54b, 10) and Jul. MS. B (once, 18, 1).

2. The later stage of development is seen in the forms *you-self* in Hav. (once, 2425), *yu-self,* also in Hav. (once, 2595 helpes me and *yu-self*) and *yow-self* in Curs. M. (2x viz. 16653; 28026).

II. Forms inflected with *-e.* 1. The earlier stage is represented by *eow selfe* in Lamb. Hom. (once, 15, 2), *eu seolue* in R. Poems of J (2x viz. 1, 398; 3, 299) and *ou selue* in Harl. 2253 (once, G 17, 2).

2. Two forms with the transitional *ȝ-* occur, namely *ȝou seolue* in Laȝ. B (once, 12514) and *ȝou selue* in MS. C of Horn (once, 364).

III. Forms inflected with *-en* (*-an*). 1. The earlier Southern monuments contain 8 forms as follows: *eou-seolfan* in Lamb. Hom. (once, 13, 33), *eou-seluen* in Lamb. Hom. (once, 35, 20), *eow seluen* in Lamb. Hom. (once, 35, 21) and Laȝ. A (once, 5802), *eow seoluen* in Laȝ. A (once, 12514), *ou seluen* in Digby 86 (once, 35, 8), *ou suluen* in Ancren R. (8x e. g. 98, 10; 186, 2; 188, 24; 422, 1, etc.), *ow seluen* in MS. C of Kath. (2x viz. 1291; 2353) and *ow seoluen* in Kath. (2x viz. 1291; 2353), Marh. (once, 18, 26) and in MS. R of Jul. (once, 18, 1).

2. One form with initial *g-*, *giu seluen,* occurs in Trin. Hom. (once, 115, 19).

3. The four forms with initial *ȝ-* are equally early; they are *ȝew seluen,* found in V. & V. (2x viz. 123, 5 . 8), *ȝeu seluen* in V. & V. (5x viz. 53, 33; 79, 21; 95, 28; 93, 23; 123, 5), *ȝiu seluen* in Trin. Hom. (once, 195, 4) and *ȝuw sellfenn* in Orm. (2x viz. 949; 17952).

C. The intens-reflex. plur. formed with a gen-poss. appears as *ȝowre-self* in Nor. Leg. II (once, 2, 157), *zoure-self* in Nor. Leg. II (once, 35, 462) and *your-self* in Curs. M. (2x viz. 26367; 26370).

No one form occurs often enough that it could be said to prevail in any period or dialect or even monument. On the whole the uninflected forms are preferred in the later pieces, and especially in the North. The Kentish, Midland and Northern monuments have only the forms with initial *g*, *ȝ* or *y* while the Southern pieces cling to the older vowel-beginning forms, with variant forms of *self* according as they use *e*, *eo*, or *u*.

A general summary of all the numbers and cases of the pronoun of address for the 63 monuments covering a period of approximately two hundred years shows the rather amazing total of 320 different forms. About a sixth of these may be disregarded as representing either scribal vagaries or errors in transcription or printing. Those forms which then remain can be almost equally divided into three great classes comprising those common at certain times, those presenting dialectal peculiarities of pronunciation and those which are mere orthographic variants of the more common forms.

SECTION III. SYNTAX.

I. NOMINATIVE SINGULAR AND PLURAL.[71]

1. The pronoun is used as subject before a declarative verb in about 74% of all occurrences in the period represented by pieces 1-32, approximately the first half of the century, and about 62% in Nos. 33-63. For the first period see especially Lamb. Hom. (122x out of 158), Orm. (428x out of 647), V. & V. (397x out of 471), Ancren R. (247x out of 348), Laȝ. (546x out of 705), O. & N. (251x out of 302) and Fl. & Bl. (41x out of 49); for the second period see Digby 86 (53x out of 81), Psalter (306x out of 571), Nor. Leg. II (527x out of 764), So. Leg. (956x out of 1245), Curs. M. (974x out of 1696), R. Glouc. (172x out of 206) and Harl. 2253 (128x out of 211).

2. In certain monuments there is a marked tendency to place a complement or modifier, usually the object or adverbial modifier, between subject and verb. See especially Lamb. Hom., Orm., Prayers & Hymns (4x e. g. 191, 9 Vor *þu* me hauest iholpen; 193, 34, etc.), Woh. (8x e. g. 271, 19 bute *þu* swete ihesu for me ȝef þe seluen; 275, 15, etc.), Laȝ. (26x e. g. 4355 and seoððen *þu* hine slowe; 7374; 8158, etc.), R. Poems of J (9x e. g. 1, 111 *þu* hit seyst; 1, 333; 3, 334, etc.), Psalter (9x e. g. 22, 4 For *þou* with me ert; 30, 9, etc.), So. Leg. (19x e. g. 10, 367 For *þou* me hast þat lime bi-nome; 10, 501; 15, 335, etc.) and Curs. M. (16x e. g. 17075 Maria meke, *þou* moder es; 20626; 17197, etc.). For the first period these examples of intervention constitute about 3% of all occurrences of subj. bef. declar. verb, while in the second period they are less than 2% of the total. It is to be noted however that the examples above listed all occur in principal propositions.

3. Bordering closely upon the above group and in many instances with practically no line of demarcation except the somewhat arbitrary acceptation of the fact that they occur in subordinate clauses, are to be found a large number of examples of transposition where the verb is placed later in the clause than normally occurs. It is possible to classify most cases of transposition as partial or complete, according as the verb is thrown somewhat nearer to the end of the subordinate clause (oft-

---

[71] Since sing. and plur. do not differ much in use, figures are given for the sing. only.

times, no doubt, on account of the intervention of complement or modifier even more than because the clause is subordinate) or according as the verb is thrown to the very end with auxiliary and participle or infinitive reversed. For examples of partial transposition see Curs. M. (1707 Quen *þou* þi timber wel has laid) or R. Glouc. (4004 þe gret despit . . . þat *þou* hom misdest ylome), for complete transposition, V. & V. (63, 25 Gif ðu ðese godes ȝiue biȝeten miht). Complete transposition is most common in the earliest monuments under consideration and falls into disuse with the later writers except in cases where sentences are most unnaturally arranged in order to reproduce the Latin or give the required verse form. For the first half of the century all forms of transposition constitute about 19% of the total of examples where the subj. precedes a declar. verb; for the second half of the century they are less than 12% of the total. For the first period the proportion of transposed verbs to the total number of occurrences where the declar. verb follows the sing. pronoun of address is as follows in the more important monuments: B. Rule (6 to 28 e. g. 5, 14; 117, 10, etc.), Lamb. Hom. (23 to 122 e. g. 15, 23; 17, 14, etc.), Orm. (112 to 428 e. g. 855 tatt child, tatt *tu* streonenn shallt; 1246; 1496, etc.), Marh. (18 to 87), Ancren R. (30 to 247 e. g. 108, 25; 304, 13, etc.), Laȝ. (123 to 546 e. g. 4360; 8353 ȝif *þu* þis writ iheren wult; 9847, etc.), Prov. of A. (19 to 47), O. & N. (13 to 251), Fl. & Bl. (3 to 41) and Comp. Mar. (0 to 7); for the second period: Digby 86 (4 to 53 e. g. 33, 110; 35, 74, etc.), H. H. (3 to 52), Psalter (5 to 306 e. g. 50, 6 when *þou* demed is; 70, 3; 103, 8, etc.), Nor. Leg. II (57 to 527 e. g. 3, 95; 10, 267; 19, 205, etc.), So. Leg. (114 to 956 e. g. 10, 60; 10, 502; 15, 145, etc.), Curs. M. (150 to 974 e. g. 974 if *þou* it bid; 1686; 1707), R. Glouc. (25 to 172 e. g. 942; 2474; 3994, etc.) and Harl. 2253 (8 to 128 e. g. W 3, 16 er *þou* me slo; 11, 11; 12, 14, etc.).

When the subordinating conjunction is omitted the verb may be retained in normal position right after its subj. or transposed, as the writer chooses. Cf. Curs. M. (8635 Yeild me mi child *þou* fra me stall).

All thru the century the number of cases where transposition does not take place in subordinate clauses exceeds the examples of transposition, giving additional evidence that the practice of placing the verb last was more a convenience to writers of verse than a grammatical obligation. It is unfortunate that there is available for the century so little prose since the language of many if not most of the poetical monuments shows so many instances of an unnatural word order.

4. There are at least four types of sentences in which the pronominal

subject follows a declar. verb. In the most common one a complement or adverbial modifier is placed first for emphasis (Hav. 1127 To-morwe sholen *ye* ben weddet); another quite common type omits the connective *if* and shows that the clause is conditional by the inversion of subj. and verb (Curs. M. 14296 Had *þou* sco said ben her mit vs. Had noght mi broþer deied þus); a rarer type of inversion appears to have no definite grammatical reason unless it be that *ne* is understood (Curs. M. 12036 Sal *þou* neuer cum sund to tun); and finally, thru confusion with the form of the direct question, the indirect occasionally has inverted subj. and verb. (Curs. M. 7292 sais me quartill Hav *yee* me fatt? quat es your will?[72])

Only about 7% of all pronominal subjects of the 2nd pers. sing. are thus used after declar. verbs bef. 1250 A. D., and about 11% in the second half of the century. The most abundant use of this inversion occurs, for the first period in Lamb. Hom. (10x with inversion to 122 without e. g. 7, 24 þenne gest *þu* forð; 39, 20, etc.), Orm. (94x to 428 viz. inversion after *þa* 41x,[73] after other adverbs 44x, after complements 9x e. g. 1586 þa lakesst *tu*; 4194; 5174, etc.), V. & V. (27x to 377 e. g. 23, 15; 25, 2; 39, 8, etc.), Ancren R. (18x to 247 e. g. 118, 26; 136, 6; 228, 25, etc.), Laȝ. (39x to 549 e. g. 2294; 3083; 9111, etc.), Gen. & Ex. (5x to 54 e. g. 1570; 1762; 1813, etc.) and R. Poems of J (12x to 110 e. g. 1, 287; 6, 9; 10, 96, etc.); for the period after 1250 A. D. it occurs in Siriz (9x to 46 e. g. 118; 268; 279, etc.), B. & S. I (9x to 30 e. g. 4, 4; 8, 4; 12, 3, etc.), H. H. (17x to 52 e. g. 96; 118; 194, etc.), Psalter (143x to 306[74] e. g. 3, 4 mi fanger art *þou*; 5, 13; 7, 10; 9, 35, etc.), Nor. Leg. II (112x to 527 e. g. 1, 52; 3, 64; 9, 79, etc.), So. Leg. (34x to 956 e. g. 10, 365; 15, 277; 25, 88, etc.), Curs. M. (227x to 974 e. g. 14256; 16365; 16725, etc.), R. Glouc. (only 3x to 172 viz. 2473; 4202; 10456), Kil. Poems (13x to 95 e. g. 1, 71; 1, 132; 2a, 40, etc.) and Harl. 2253 (18x to 128 e. g. P 1, 48; 5, 94; W 11, 19, etc.). No examples of this inversion of pron. subj. and declar. verb are to be found in B. Rule, Eg. Hymns, Kent. Serm., Hymns of CCCO., Eust., Jos. or Dream-Book or in some minor pieces.

5. The examples of the pronoun used as subj. after interrogative

---

[72] Probably some of these are only made to seem indirect questions thru wrong punctuation on the part of the editor.

[73] The very frequent occurrence of such constructions gives an idea of the relative poverty and monotony of Orm's vocabulary and general style.

[74] This inversion of subj. and verb is a very noticeable feature of the style of the Psalter.

verbs aggregate for the first period about 5% and for the second, 8%. Cf. Orm. (11x e. g. 5220 Whatt willt *tu*; 8941; 10283, etc.), Ancren R. (39x e. g. 16, 27 wenest *tu*; 146, 20; 186, 21, etc.), Laȝ. (40x e. g. 3804; 4322; 5015, etc.), O. & N. (29x e. g. 303 *Wenestu*; 563; 711, etc.), Vox (12x e. g. 130; 186; 232, etc.), Psalter (30x e. g. 12, 1; 21, 2; 42, 5, etc.), So. Leg. (128x), Curs. M. (151x), R. Glouc. (18x), Harl. 2253 (6x), etc., etc. Once only the subject precedes a verb in what is apparently a question (Kil. Poems 3, II, 21 Mid whate *þou* art ischrud aboute?).

6. The use of the pronoun with imperative verbs is much more common than in modern usage. About 2% of all nom. singulars are used bef. impv. verbs and about 9½% after, in the first period; in the later period the ratio shifts to 8½% before and 6% after. In the more important monuments the pronominal subj. of the impv. verb occurs as follows: in Orm. (bef. verb no x; after verb 113x, with *witt* 103x[75] e. g. 2239 Acc witt *tu* wel; 2592, etc., and with other impv. verbs 10x e. g. 2205; 2317, etc.), V. & V. (bef. 3x e. g. 13, 19 *ðu* hine blesci; 89, 16, etc. and after 42x e. g. 25, 1; 27, 16, etc.), Ancren R. (bef. 11x and after 24x), Laȝ. (bef. 13x and after 63x), O. & N. (bef. 5x e. g. 297 uorþ *þu* go; 555; 599, etc. and after no x), R. Poems of J (bef. 3x and after 8x), Hymns of CCCO. (bef. 8x and after 4x), Digby 86 (bef. 15x e. g. 35, 39; 35, 66; 37, 14, etc. and after 5x e. g. 33, 117; 35, 61; 75, 3, etc.), Psalter (bef. 16x e. g. 16, 13 Fra wicked *þou* outake saule mine; 21, 20; 24, 5, etc. and after 70x e. g. 4, 2; 9, 33; 16, 8, etc.), Nor. Leg. II (bef. 30x and after 33x), So. Leg. (bef. 32x and after 64x), Curs. M. (bef. 202x e. g. 1093; 1271; 1670, etc. and after 93x e. g. 654; 969; 2409, etc.), R. Glouc. (bef. 5x and after 3x), Kil. Poems (bef. 18x e. g. 1, 7; 1, 117; 5, 92, etc. and after 6x e. g. 1, 125; 5, 109, etc.) and Harl. 2253 (bef. 45x and after 10x). The pronoun is never used bef. impv. verb in B. Rule, P. Mor., Lamb. Hom., Trin. Hom., Orm., S. Warde, Hali M., Kent. Serm., Comp. Mar., Siriz, Prov. of Hend., B. & S. II and Dream-Book.

The impv. verb is used without an expressed pronominal subj. very frequently; indeed for the entire period there are about one-third as many instances of omission of nom. sing. in impv. constructions as there are nom. sing. pronouns altogether.[76]

7. Two types of pronominal construction, occurring with equal fre-

---

[75] More evidence of Orm's poverty of expression!

[76] In counting cases where the pronominal subj. is understood, only one verb in each line or verse has been counted.

quency, have been taken together as vocative altho one might in many instances be considered merely a loose appositive to the subject. The first is found in vocative phrases usually of respect, affection, etc., or of disparagement (Curs. M. 16643 *Yee* foles mistruand folk); in the other case the pronoun is usually followed by *and* and a substantive, the two explaining the subject of the verb (Curs. M. 6134 Gas he said vte o mi kyth, *yee* and all your folk yow wit). Sometimes the pronoun used as a vocative is itself made explanatory by means of a relative clause (Curs. M. 24386 *þou* þat o soru ne wist noght are). For the first period these vocatives form about 1½% of the whole number of nom. singulars, for the second period about 2%. See especially Lamb. Hom. (3x viz. 113, 28 *þu* ure feder þe ert on heuene; 123, 20 twice), V. & V. (11x e. g. 9, 28 *ðu* lease dieuel; 17, 17; 41, 14, etc.), Ancren R. (9x e. g. 102, 16; 114, 15; 288, 19, etc.), Laȝ. (4x e. g. 13153; 22189; 28724, etc.), O. & N. (4x e. g. 556; 1111, 1335, etc.), Psalter (6x e. g. 6, 4; 24, 7; 39, 12, etc.), Nor. Leg. II (8x e. g. 2, 239; *þou* Emperoure; 4, 227; 14, 326, etc.), So. Leg. (31x e. g. 10, 365; 15, 364; 29, 23, etc.), Curs. M. (49x e. g. 2077 *þou* wared thing; 2361; 3978, etc.), R. Glouc. (5x e. g. 802; 2721; 4187, etc.) and Harl. 2253 (4x viz. P 5, 121 Alas, *þou* seli fraunce; W 11, 9 . 17; P 5, 113).

8. The use of the nom. sing. or plur. as subjective complement is surprisingly rare. A great many questions occur, such as 'What art þu?' where the pron. occupies the place of subj. compl. but is really the subj.; a few sentences are to be found where the pron. is probably subj. altho the meaning might admit of the other construction; but only one instance has been noted which can be unquestionably subj. compl., in Nor. Leg. II (32, 120 Sen he sais it es noght *þou*).

9. The omission of the pronominal subj. of declarative and interrogative verbs occurs occasionally. Cf. Trin. Hom. (29, 23 Nu shalt [*þu* hatien] þo þe iuel hauen don), V. & V. (77, 13 ȝif ðu ȝifst ðo manne ðe gaf ðe, oðer ðe [*ðu*] wost ðat wile ȝiuen ðe), Kath. (360 *Cleopest* þeo þinges godes?) and Kil. Poems (12, 18 Wiþ sorow þou com into þis world, wiþ sorow *ssalt* wend awai; 5, 75 Tel me, boi, what hast ido?; 5, 93 What hast ido, bel amy?; 5, 109; 2b, 163). No effort has been made to collect all passages where such omission seems to have occurred because without exact punctuation in the MSS. it is often impossible to decide whether the writer intended that the verb should stand in a new sentence, alone, or be one of a series of verbs belonging to a previously expressed subject. The type of literature of the period dealt with is not popular enough in its nature to furnish many examples such as

those quoted from Kil. Poems and cases like the first passages quoted are generally regarded by editors as due to scribal omissions.

II. GENITIVE-POSSESSIVE SINGULAR.

In tracing the syntactical progress of the gen-poss. sing.. it will be convenient to divide the period, as was done in Section II, into the smaller periods represented, roughly, by Nos. 1-23, 24-45 and 46-63.

1. In the first of these periods the form ending with *-n* (*þin*, etc.) modifies plur. nouns only 15x out of about 634 instances. Cf. Marh. (2x viz. 11, 33 wið *þin* eadi beoden; 21, 2), Jul. (3x viz. 42, 15 [B has þine]; 74, 16; 76, 1 [B has þat]), Ancren R. (5x e. g. 56, 19 *þin* eien; 106, 21; 108, 15, etc.), Laȝ. (2x viz. 18133; 24781), R. Poems of C & J (2x viz. 20, 42 [J has þine]; 23, 164), Gen. & Ex. (once, 2781). In the second period this form modifies plur. nouns 9x out of 97 instances. Cf. O. & N. (2x viz. 75 *þin* eȝene; 990 *þin* eȝe), Digby 86 (2x viz. 37, 23 twice), Siriz (2x viz. 281 *þin* eien; 283), B. & S. I (once, 10, 1 þorou *þin* heuele redes) and G. G. (2x viz. 2, 30 with *þin* eyen; 4, 28). In the third period a plur. noun is modified 66x out of 392 instances. Such use of this form occurs in 8 monuments, namely, Psalter (6x e. g. 19, 7; 20, 9; 89, 4, etc.), Horn MS. L (once, 1296 In *þyn* armes), Hav. (2x viz. 1273 wit *þin* eyne; 2069 with *þin* hend), Curs. M. (38x e. g. 19813 *þin* orisuns and *þin* almus; 20963; 25430, etc.), R. Glouc. (6x e. g. 728; 2223 *þin* elderne; 2546, etc.), Kil. Poems (4x viz. 2a, 140 *þin* eiine; 2a, 17 . 18; 12, 4), Harl. 2253 (6x e. g. G 4, 30; G 9, 5; P 5, 114, etc.) and Dream-Book (once, 133 *þin* shon beþ olde).

When this increasing use of the *-n*-form with plur. nouns is viewed in the light of the facts brought forth in Section II[77] it becomes evident that it was used more and more for the sake of euphony and not merely as a modifier of the singular as was the case earlier.

2. The short form (*þi*, etc.) modifies plur. nouns during the first two periods only 3x out of about 754 instances, namely, in Exp. Pat. Nos. (once, 122 *þi* leoue hali engles), Fl. & Bl. (once, 361 And wel *þi* nedes for to do) and G, G. (once, 4, 46 *þi* sorwen). In the third period and in the Northern monuments particularly the short form mod. plur. nouns 267x out of a total of about 2415 instances. The pieces and collections in which these occur are Psalter (120x[78] e. g. 16, 7; 88, 22; 118, 77, etc.), Nor. Leg. I (once, 2, 246 *þi* gude praiers), Nor. Leg. II (53x e. g. 10, 77

---

[77] See page 31 ff.

[78] The great majority of these occur in the last 50 psalms.

þi maumettes; 28, 157; 3, 55, etc.), B. & S. II (15x e. g. 41 *þi* castles and *þi* toures; 44; 227, etc.), Horn MS. L (2x viz. 868; 940), Hav. (once, 1320), Curs. M. (61x e. g. 1710; 1925; 4605; 5267, etc.), Kil. Poems (8x e. g. 8, 2; 8, 16; 12, 32, etc.), Harl. 2253 (5x e. g. P 5, 116; G 8, 70; G 12, 57, etc.) and Dream-Book (once, 74 *þi* nexte frendes). This increased tendency to use the short form with plur. nouns can be explained for the Northern monuments by the fact that the final *-n* was largely dropped in their dialect, but in the other later pieces and collections it is plainly due to a tendency to generalize the short form.

3. The so-called inflected form is really such in the earlier monuments to a great extent; it is hard to say how often it really has an inflectional value later in the century because it is found at times in monuments where an inorganic *e* is added to various words where it has no historical right to be. In such monuments it is probable that it belongs often with the *-n*-forms. At any rate it is hardly correct to term the *-ne*-form, as some have done, the plural form, since it modifies sing. nouns in the first period 508x and plurals only 327x, in the second period sing. nouns 84x and plurals 75x, and in the third period singulars 257x and plurals 271x. In Nos. 1-22 its modification of plur. nouns exceeds that of the sing. in 12 pieces, namely, Exp. Pat. Nos. (once), Trin. Hom. (plur. 13x to sing. 5), Orm. (32x to 17), Kath. (12x to 2[79]), Marh. (17x to 3), Jul. (6x to 1), Hali M. (9x to 2), Woh. (9x to 2), Meidan M. (4x to 2), Prose Credo (once), R. Poems of C & J (14x to 4) and Gen. & Ex. (3x to none); in Nos. 24-45 the pieces and monuments are only 5 in which this is true, namely, Digby 86 (7x to 2), Eust. (3x to 1), Vox. (5x to 3), B. & S. I (25x to 5) and H. H. (9x to 1), all pieces contained in MS. Digby 86; in the last period the plur. nouns mod. by *þine* exceed the sing. in 8 monuments, namely, Psalter (122x to 81), Judas (once), B. & S. II (5x to none), Horn (9x to 8), Hav. (5x to none), Curs. M. (25x to 14), R. Glouc. (12x to 7) and Jos. (5x to 1).

Evidently, then, the use of the *-ne*-form (*þine*, etc.) is to be explained neither on the ground of inflection nor of syntax, but probably lies in the field of versification or else in some later monuments, as suggested above, it is bound up with the general problem of the use of an inorganic and perhaps silent *e*.

4. In the first period *þin*, or its variants, is absolute 29x viz. in Lamb. Hom. (once, 15, 24), V. & V. (once, 67, 8), Kath. (2x viz. 1845 twice),

---

[79] In these 2 cases (1341 we leaueð þi lahe and al *þine* bileaue; 2233 streche forð *þine* swire) the scribes of MSS. B and C have written *þi* as tho they felt *þine* to be a purely plur. form.

Marh. (2x viz. 7, 29 mi sawle schulde sinken al swa as *þin* schal; 10, 9), Jul. (2x viz. 10, 11 as mit *tin* ahne; 34, 19), Prayers & Hymns (7x e. g. 197, 130 Vor *þin* is þe wurchipe; 199, 157; 213, 15, etc.), Hali M. (once, 13, 10), Woh. (once, 271, 7 Al is *tin*), Ancren R. (6x e. g. 282, 27 ase of *þin* owune; 290, 26; 316, 15 Sire, Godes ore ant *tin*; 408, 11, etc.), Laȝ. (4x viz. 2995; 8875; 18133; 26370), R. Poems of C & J (once, 23, 164) and Gen. & Ex. (once, 3661), while *þine,* or its variants, is absolute but 7x viz. in Lamb. Hom. (2x viz. 39, 20 þenne bureȝest þu here saule and ec *þine* aȝene; 79, 12 ȝif þu mare spenest of *þine*), V. & V. (once, 83, 12), Hali M. (once, 47, 12 wið þe and wið *þine*), Ancren R. (2x viz. 38, 8; 180, 20) and Laȝ. (once, 9842).

In the second period *þin* is used absolutely 10x viz. in O. & N. (2x viz. 259; 319), Fl. & Bl. (4x viz. 4; 56; 380; 686), Siriz (3x viz. 269; 290; 385) and B. & S. I (once, 57, 2), while *þine* is so used only 3x, in O. & N. (2x viz. 624; 712 Betere is min on [craft] þan alle *þine*) and Fl. & Bl. (once, 352).

In the last period *þin* occurs as an absolute 35x, in So. Leg. (2x viz. 15, 348 þou berst more þane *þin* owe; 24, 38), Hav. (3x viz. 1128; 1228; 1789), Curs. M. (20x, alone 14x e. g. 15577 þe and *þin*; 5218; 6733, etc.—with *aun* 6x e. g. 8168 sir welcum to *þin* aun; 15045; 15075, etc.), R. Glouc. (5x viz. 699; 2063; 7390; 10283; 10789), Jos. (once, 218 ich am *þin*) and Harl. 2253 (4x viz. G 2, 41; 4, 26; W 11, 36; G 13, 11), while *þine* is absolute 41x, in Psalter (5x e. g. 73, 16; 88, 12; 118, 94), Nor. Leg. II (6x e. g. 2, 377 and *þine* it es; 14, 165; 33, 131, etc.), So. Leg. (5x e. g. 27, 981; 42, 36; 59, 249, etc.), Hav. (once, 619), Curs. M. (19x, with *auin* once, 2750—alone 18x e. g. 977; 1967; 2361; 2386, etc.), R. Glouc. (4x viz. 335; 1080; 10327; 10333) and Kil. Poems (once, 2a, 180).

There are three different uses of the absolute pronoun, of almost equal importance. In the first construction the pronoun becomes a substantive thru the omission of the noun which it modifies (Curs. M. 6733 If min ox slas *þin*). This substantivized pronominal adjective may be used in almost any noun construction, both *þin* and *þine* standing for sing. and plur. nouns alike. In the second construction the gen-poss. sing. is always used as a predicate adjective or subj. compl. (Harl. 2253 G 2, 41 tak al þat þin ys). In the third construction the gen-poss. is followed by *own* or *one,* the two together being substantivized as in the first construction or else used as predicate adj. as in the second. (Marh. 10, 9 for nabbich imi nowcin nanes cunes elne bute *þin ane*; Curs. M. 3091 I and mi wijf ar al *þin aun*).

5. The use of the gen-poss. sing. as a postpositive modifier is at no time popular during the thirteenth century. *þin* is so used 10x, in Hali M. (once, 29, 10 to goderheale *þin* he hit þoleð), Laȝ. (once, 18885 nu hit is iwille *þin*), Gen. & Ex. (once, 2282), Eust. (once, 146) and Curs. M. (6x e. g. 5822 in bosum *þin*; 8801; 13340; 15527, etc.); *þine* is postpositive 89x, namely, in Metr. Credo (once, 39 Lauerd Godd, in hondes *tine* = in manus tuas), in Laȝ. (once, 16039 of sorȝe *þine*), R. Poems of C & J (once, 20, 19 Mon let sunne and lustes *þine*), O. & N. (once, 964 ine nest *þine*), Best. (once, 209 sei ðu . . . to ðe prest sinnes *tine*), in Psalter (77x e. g. 2, 8 Right my wai in sight *þine*; 8, 2; 9, 2, etc.[80]), Curs. M. (6x e. g. 14337 wit angels *þine*; 19668; 20071, etc.) and in Kil. Poems (once, 2c, 15). There are very strong evidences of Latin influence in this construction, especially in Psalter and Curs. M.

6. A few examples occur in which the pronoun has the appearance of an ordinary poss. modifier but the context requires that it be read as an older genitive. *þin* is so used at least thrice in the first period, once in the second, and thrice in the third. Once in Jul. and twice in Hali M. it is necessary to take *þin* as a gen. in order to account for the form of *anes* which accompanies it (Jul. 32, 5 Habbich *þin* anes help; Hali M. 29, 5 Lutel þarf þe carien for *þin* anes liveneð; 29, 17 ant *tin* anes dale bruken); once in MS. H of H. H. *þyn one* is used adverbially (79 wenn þou bileuest al *þyn one*); twice in Hav. *þin* is governed by the French preposition *maugre* (1128; 1789); and once in Curs. M. there occurs a genitive absolute corresponding to the Greek construction (29430 Alsua if þou *þin vnwitand* Has laid, mai fall, on clerk þi hand).

7. The short form *þi* is used as an objective genitive 30x, usually with the noun *luue* or some similar verbal noun. Cf. S. Warde (once, 253, 19 ant euch her me rueð up of *þi* munegunge), Woh. (6x viz. 271, 9 for *þi* luue; 271, 10; 269, 25 þen in alle blisse beon and forgan *þi* sihðe; 275, 21; 279, 2; 285, 12), Meidan M. (once, 67), So. Leg. (2x viz. 9, 357 for *þi* loue; 64, 89), Horn (once, 589), Curs. M. (9x e. g. 15361 Or wat i qua *þi* traitur es þat sua þe luued has ai; 2037 In *þi* louing þou do me lend—the phrase *for þi luue* 7x e. g. 3844; 8392; 15534, etc.), R. Glouc. (5x viz. 6361 uor *þi* loue; 7023 þat ich ssolde *þi* traytour be; 7027; 10354; 6375) and Harl. 2253 (5x viz. W 11, 15 for *þi* loue; G 4, 11 . 17 . 24; W 11, 30). This objective genitive has usually given way in

---

[80] The large number of these postpositive modifiers in the Psalter will give some idea of the servile manner in which English word-order has been abused in order to reproduce the Latin Psalter.

the thirteenth century to the prepositional phrase *of þe* (Kil. Poems 4, 32 For loue *of þe*).

8. A reinforced or double possessive of the 2nd pers. sing. has been found just once, in Nor. Leg. II (21, 150 þe tresore of *þine* þat I had Ilkadele it es despe[n]).

9. The syntax of the older forms of the possessive pronoun is, as a rule, according to O. E. usage. Here and there, however, a form is misused. Perhaps the surprising thing is that so large a per cent of the O. E. forms surviving are correctly used.

a. The masc-neuter gen. *þines* (or *ðines*), occurring in all only 20x, generally modifies genitives of limitation or possession. See B. Rule (3x viz. 3, 5 beboda *þines* lareowes; 3, 6; 107, 18 on þam midle *þines* temples), Lamb. Hom. (once, 11, 26 *þines* drihtenes nome), V. & V. (4x viz. 39, 25; 109, 28 ut of *ðines* fader huse; 109, 32 ut of *ðines* flasches lustes; 111, 1) and Laȝ. A (4x viz. 3517 ich eam *þines* fader sweine; 16546; 17958; 28605). Occasionally it modifies a subjective or objective gen., namely, in Lamb. Hom. (4x viz. 21, 3 Muchel is *þines* eorðliches louerdes eie; 37, 29 for *þines* drihtenes luue; 39, 7; 51, 8 efter *þines* scriftes wissunge); three times it mod. an adverbial gen. viz. in Lamb. Hom. (once, 17, 35 swa þu waldest þet me dude þe *þines þonkes*) and in V. & V. (2x viz. 111, 7-8 tu scule ðe woreld forlaten *ðines aȝenes þankes*, ær ðe deað hes te benime *þines unþankes*); and once it mod. the plur. object of a preposition in text K-W of Prov. of A. (499 mid alle þeuues *þines*).

b. The masc. acc. *þinne* (*þinna*) occurs 16x; it mod. masc. nouns used as direct obj. in B. Rule (2x viz. 37, 31 Vnwreoh God Ealmihtige *þinne* wey; 37, 5 forþyldiȝa *þinna* drihten), V. & V. (once, 73, 6 ȝif ðu *ðinne* cristendom wel hal[d]st), Ancren R. (once, 106, 28 dute *þinne* tutelinde muð mit þine lippen), Laȝ. A (6x viz. 5074 leoue *þinne* broðer; 11494; 13067; 13341; 16078; 18916) and So. Leg. (2x viz. 9, 439 to lere *þinne* sone; 55, 230); in Laȝ. A it modifies the obj. of a preposition (3x viz. 12945 wið Cadal *þinne*[81] cniht; 13571; 22182 mid *þinne* monweorede); and once, in V. & V. it mod. a gen. sing. (71, 14 *ðinne*[81] lichame[s] hæle).

c. The fem. sing. form *þire* (*þinre,* etc.) which occurs altogether 87x, modifies gen. nouns of possession or limitation 8x, in B. Rule (5x e. g. 17, 3 on *þinre* swuster eaȝe; 3, 7; 9, 12, etc.), Laȝ. A (2x viz. 28104 *þire* suster sune; 28152), R. Poems of J (once, 6, 49 for *þire* moder bene); and dat. nouns, generally obj. of a prep., 76x, in B. Rule (2x viz. 5, 30-31), Lamb. Hom. (2x viz. 25, 1; 33, 5), V. & V. (11x e. g. 83, 21;

---

[81] Written in the MSS. however as *þine*, the contraction.

87, 6 fram *ðire* herte; 115, 12; 141, 27, etc.), Prayers & Hymns (5x e. g. 199, 149; 199, 169 to *þire* glednisse; 199, 168, etc.), Laȝ. A (49x viz. mod. obj. of prep., often *hond,* 46x e. g. 8865 to *þire* aȝere hond; 14591 of *þire* brude; 22654, etc.—indir. obj. 2x viz. 3160-1 worðschepe haue þu *þire* wel-deda and *þire* feire sonde—direct obj. once, 5073 and ilef *þire* moder), Prov. of A. (once, 242) and O. & N. (6x e. g. 429 on *þire* side; 914; 1650, etc.). Once, in O. & N. this form may be read as an objective gen. (1116 hi þencheþ alle of *þire* pine), once, in Laȝ. it modifies a gen. plur. (22448 ah ich wulle habben *þire* hæhre monne children), and the one time that it occurs in Curs. M. it modifies the neuter obj. of a prep. (4313 Thoru *þire* ei).

d. The few plural forms noted in Section II, namely *þinra* in Lamb. Hom., *þinum* (*þirum*) in B. Rule and *ðinen* in V. & V. are used correctly.

III. GENITIVE-POSSESSIVE PLURAL.

The chief question in connection with the gen-poss. plur. relates to the use of the forms with final *-e*. And here also the data relating to the so-called inflected and uninflected forms will be most likely to lead to definite conclusions.

1. In the period represented by the first 32 monuments, the uninflected forms modify sing. nouns 161x, plur. nouns 88x and are used as genitives 5x, while the *-e*-forms mod. sing. nouns 86x, plur. nouns 58x and are used as genitives 9x. There is not much to be gained from these figures except that the uninflected forms predominate over the others in a ratio of 12 to 7, and that the genitival uses which survive from the O. E. are comparatively few and insignificant.

a. The number of the uninflected forms is, for the chief monuments of this first period, as follows: Lamb. Hom. (sing. 11x e. g. 13, 31; 105, 21; 137, 29, etc.—plur. 12x e. g. 13, 33; 35, 22; 105, 22, etc.), V. & V. (sing. 11x e. g. 113, 4; 45, 5; 81, 5, etc.—plur. 5x e. g. 71, 29; 79, 23; 81, 6, etc.), Kath. (sing. 13x e. g. 570; 807; 1293, etc.—plur. 3x viz. 344; 642; 837), Ancren R. (sing. 81x e. g. 112, 27; 188, 6; 34, 17, etc. —plur. 37x e. g. 46, 25; 66, 22; 254, 25, etc.) and Laȝ. (sing. 21x e. g. 3652; 17082; 26448, etc.—plur. 16x e. g. 5865; 12516; 13943, etc.). In O. & N. (3x), R. Poems of J (4x) and Ass. (3x) the uninflected forms mod. only sing. nouns.

b. The inflected or *-e*-forms mod. sing. and plur. nouns as follows: Orm. (sing. 20x e. g. 946; 1724; 934, etc.—plur. 20x e. g. 9008; 11094; 14043, etc.), V. & V. (sing. 18x e. g. 69, 23; 79, 22; 139, 17, etc.—plur.

once, 79, 23), Ancren R. (sing. 9x e. g. 50, 19; 64, 15; 44, 20, etc.—plur. once, 46, 25), Laȝ. (sing. 24x e. g. 9502; 15047; 19175, etc.—plur. 17x e. g. 13889; 19537; 5874, etc.) and Kent. Serm. (sing. once, 35, 11—plur. 3x viz. 28, 22; 32, 4). In Lamb. Hom. (2x), Meidan M. (3x) and Prov. of A. (3x) the inflected forms mod. only plur. nouns; on the contrary they mod. only sing. nouns in Gen. & Ex. (6x) and R. Poems of J (5x).

c. The above figures are exclusive of the genitival uses of the pronoun, of which examples occur, for the first period, as follows: uninflected forms in Lamb. Hom. (gen. of limitation once, 21, 30 þah ure an heafde idon *eower alre* sunne—partitive gen. once, 15, 32 and *eour* eyþer sunegað biforan drihten), Kath. (once, 1277 Me ȝef fifti wimmen . . . hefden mid wordes *ower* an aworpen), Ancren R. (once, 194, 5 heo biswikeð ou and is *ower* treitre) and Fl. & Bl. (once, 534 Hele ihc wulle and noþing wreie *Ower beire* cumpaignie); inflected forms in Orm. (part. gen. with *nan* 3x viz. 9271; 12701; 18338), V. & V. (67, 16 ȝif *ȝeure* ani . . . is ihealden for wis) and Gen. & Ex. (part. gen. 5x viz. 2318 *gure* on haueð is cuppe stolen; 3471 Ilc *gure;* 3760-64 thrice).

2. In the period represented by the last 31 monuments the uninflected forms mod. sing. nouns 235x, plur. nouns 85x, and are used as genitives 3x, while the *-e*-forms mod. sing. nouns 112x, plur. nouns 49x, and are used genitively only once. The ratio of uninflected and *-e*-forms has become 12 to 6 and the number of pure genitives is smaller still.

a. For this period the relative modification of sing. and plur. nouns by uninflected forms is for the chief monuments as follows: Psalter (sing. 5x e. g. 30, 25; 34, 14; 80, 4, etc.—plur. 10x e. g. 4, 5; 23, 9; 61, 9, etc.), So. Leg. (sing. 68x e. g. 25, 119; 47, 324; 55, 146, etc.—plur. 21x e. g. 40, 179; 55, 124; 62, 75, etc.), Curs. M. (sing. 138x e. g. 4129; 7292; 26118, etc.—plur. 36x e. g. 6599; 9306; 18125, etc.), R. Glouc. (sing. 4x viz. 10285; 10310; 4035; 11710—plur. once, 2658) and Kil. Poems (sing. 12x e. g. 1, 36; 8, 116; 8, 82, etc.—plur. 17x e. g. 8, 51; 8, 55; 8, 99, etc.). The uninflected form modifies sing. nouns only in Nor. Leg. II (2x), B. & S. II (once), Harl. 2253 (3x) and Dream-Book (once).

b. The inflected forms modify nouns as follows: Psalter (sing. 2x viz. 57, 3; 68, 33—plur. 3x viz. 33, 6; 47, 14; 57, 10), Nor. Leg. I (sing. 3x viz. 2, 109; 2, 418 twice—plur. once, 2, 628), Nor. Leg. II (sing. 44x e. g. 1, 400; 2, 61; 23, 59, etc.—plur. 14x e. g. 10, 38; 22, 332; 35, 1035, etc.), So. Leg. (sing. 7x e. g. 20, 138; 27, 2085; 9, 388, etc.—plur. 2x viz. 20, 127; 59, 28), Hav. (sing. 5x e. g. 171; 1416;

2067, etc.—plur. once, 2801), R. Glouc. (sing. 27x e. g. 4920; 9412; 4373, etc.—plur. 20x e. g. 4829; 7427; 4825, etc.), Jos. (sing. 7x e. g. 378; 465; 384, etc.—plur. 5x e. g. 45; 345; 417, etc.) and Harl. 2253 (sing. once, P 8, 20—plur. once, P 8, 70). The inflected forms mod. only sing. nouns in Digby 86 (3x), Prov. of Hend. (once), B. & S. II (once), Horn (once) and Kil. Poems (9x).

c. The pure genitives are found in only two monuments, namely, uninflected in Curs. M. (3x viz. 24585 þis semed stryf, bot þis was nan, For *both your* will was in an; 16272 in *yur aller* sight; 19100 I vnderstand þat yee it did *yur* vnwitand) and, inflected, in Jos. (once, 489 Nolde ȝe me ileue *ȝoure* neuer on).

The *-e*-forms modifying sing. nouns cannot be merely the survival of older inflectional forms unless it be in a very general and vague way because nouns of all genders and cases are modified indiscriminately. So it is necessary to fall back upon the same conclusions as those reached for *þine,* namely, that the *-e*-forms are used to satisfy metrical requirements or else because an inorganic *e* is in vogue.

3. The use of the gen-poss. plur. absolutely is limited. For the first period it occurs in V. & V. (once, 21, 19 for godes muchele mildce and for *ȝewer*), Ancren R. (2x viz. 266, 6 þe uiht is min and nout *oure*; 262, 16) and Laȝ. (once, 7906 Rome is *eowre* irihte), and in the second period in So. Leg. (once, 28, 70 For heore bi-leue is riȝtful and guod: and *ouwere* nis wuyrth a stre), (Horn (once, 872 Al þys lond þanne be *ȝyure*), Hav. (3x viz. 2798 Leuedi, Kristes ore And *youres*; 2800-1 For England auhte for to ben *youres,* and we *youre* men and *youres*[82]), Curs. M. (4x viz. 2068 Drightin graunt . . . þat al þis werld be *yurs* tua; 5058 Mi fader coth he fars well i watte, Knauing of *yours* haue i nan; 15409 If ye me oght of *yurs* giue; 17340 And als yee said it sal i wene On yow and *yours* bath be sene) and R. Glouc. (once, 8174 ȝare hors beþ suiftore þan *ȝoure* be).

4. Once *yur* is used postpositively, in Curs. M. (15411 In handes *yur* . i sal him teche[83]).

IV. DATIVE-ACCUSATIVE SINGULAR AND PLURAL.[84]

Since the O. E. distinction of dative and accusative has altogether disappeared as far as the forms of the pronoun of address are concerned, the syntactical classification will be made from the standpoint of modern

---

[82] See note 63, page 48.

[83] Influenced, perhaps, by *in manus tuas.*

[84] Data are given for the singular only.

English, with four chief groups according as the dat-acc. is used as object of a verb, as indirect object, as object of a preposition or as subject of an infinitive.

1. Direct object of verb. Two O. E. constructions have become merged into the one in M. E. so as hardly to be distinguished except by one who knows the history of each. In the first class are those constructions where the pronoun represents an O. E. accusative object of a verb (Ex. Woh. 269, 5 Ah hwa ne mei luue *þe*); in the second are the objects which represent an older dative object of a verb (Ex. Laȝ. 3041 sua *þe* helpe Appolin). For the pronoun of the second person it would be making an artificial distinction to attempt to separate the examples of the two usages. And the same is true of the objects of the impersonal verbs such as *þunche þ*, *reoweð* (cf. B. Rule 23, 7 ne reoweð hit *þe* nefre) or *birrþ* which Orm loves to the extent of using it with *þe* 122x (e. g. 1240 *te* birrþ ummbeþennkenn aȝȝ).

For the period represented by the first 32 monuments these objects constitute about 40% of all dat-acc. singulars. They occur in the more important pieces as follows: Lamb. Hom. (11x e. g. 9, 20 ac me *þe* sculde nimen; 15, 24; 17, 11, etc.), Orm. (206x e. g. 669; 4847; 4942, etc.), V. & V. (91x e. g. 11, 13; 39, 13 ðanne behoueð *ðe* ðat ðu bie wel warr; 65, 3, etc.), Jul. (33x e. g. 10, 11; 16, 6 *þe* schal laðin his luue; 42, 14, etc.), Ancren R. (90x e. g. 90, 19; 124, 15; 168, 8, etc.), Laȝ. (129x e. g. 1390; 1563; 3041, etc.), Gen. & Ex. (18x), O. & N. (26x), Fl. & Bl. (22x), etc. In the second period (Nos. 33-63) the dir. obj. constitutes only about 30% of all constructions. Cf. especially Digby 86 (14x e. g. 33, 205; 35, 35, etc.), Psalter (84x e. g. 2, 7; 5, 11; 19, 2, etc.), Nor. Leg. II (141x e. g. 1, 97; 3, 41; 4, 175, etc.), So. Leg. (156x e. g. 10, 21; 23, 45, etc.), Horn (36x), Hav. (22x), Curs. M. (228x), R. Glouc. (33x) and Harl. 2253 (47x).

2. Reflexive dir. obj. Not included in the above are the reflexive direct objects which constitute for the first period about 7% of all dat-acc. constructions and for the later period about 5½% only, a decrease to be explained largely by the increased use of the intens-reflex. compound form. Under the general head of reflexive are comprised two slightly different constructions, namely, that one which is merely the reflexive counterpart of the ordinary direct objects noted above (e. g. Laȝ. 1073 þu . . . scild *þe*), and one which is termed by Voges [88] and others the 'pleonastic dative,' a more or less inorganic part of the sentence which

---

[88] Voges, Der Reflexive Dativ im Englischen.

follows intransitive verbs of motion and some transitive verbs already possessed of an object (e. g. B. Rule 17, 4 far *þe* inn). The reflex. dir. obj. occurs in the chief monuments of the first period as follows: Orm. 40x e. g. 1406; 4466 tu *þe* loke wel; 5138—151 ne dred *te,* Zacariȝe, nohht; 8659; 13581), V. & V. (10x e. g. 101, 21 Bewænt *te* all abuten; 135, 25—65, 8 ȝif ðu ðus *ðe* beþencst; 65, 22; 67, 31 ne forliȝe *ðe* on hordomes; 113, 29, etc.), Kath. (5x e. g. 1529; 2086; 1887, etc.), Hali M. (17x e. g. 7, 15 And tac *þe* to him; 33, 10—35, 18 Ga *þe* nu forðre; 41, 18, etc.), Ancren R. (25x e. g. 52, 27—98, 19 hie *þe* heoneward, etc.), Laȝ. (17x e. g. 1073; 4367; 24157—9846 bi-þenc *þe*; 25769 and wend *þe* ouer þat water deope; 25791 and fus *þe* to þam feonde,[86] etc.), Gen. & Ex. (4x viz. 1816-17; 3511; 3987), O. & N. (4x viz. 161 Schamie *þe* for þin unrede; 353; 1113; 1302) and Fl. & Bl. (2x viz. 158; 756). In the later period it occurs in Digby 86 (3x viz. 35, 36 Greyþe *þe*; 35, 39; 38, 240 Hieþe *þe* oup to arisen), Psalter (3x viz. 36, 10; 69, 2—30, 3 high *þe* swiþe), Nor. Leg. II (29x e. g. 6, 243; 7, 553—19, 49 flit *þe* ferr; 22, 97, etc.), So. Leg. (35x e. g. 9, 916; 39, 154—9, 961 hiȝe *þe* swiþe; 47, 29, etc.), Hav. (2x viz. 661; 2168), Curs. M. (63x e. g. 3641 Now high *þe* suith; 7346 weind *þe* forth to morn; 10555 spede *þe*; 13754 ga *þe* nu forth; 20611, etc.), R. Glouc. (4x) and Harl. 2253 (7x e. g. P 5, 117 do *þe* forþ to rome; W 9, 25; G 15, 27, etc.).

3. The plur. reflex. is rarely used as a reciprocal pronoun. Cf. Lamb. Hom. (125, 18 min heste þet ȝe luuien ***eou*** bitwixan alswa ic luuede eou), Orm. (5273 Ðatt iss min bodeword, tatt ȝe ***ȝuw*** lufenn swa bitwenenn Rihht alls icc hafe lufedd ȝuw) and Hali M. (16, 16 for ȝif ȝe þenne hondlen *ow* in ani stude untoheliche).

4. Indirect object. Several types of this construction occur. The most common form is that in which a verb of giving, yielding, etc.—many more than in modern English—governs as direct obj. a noun and as indirect obj. the pronoun (Hav. 2402 And he shal yelde *þe* þi mede). In another very common type the dir. obj. is a clause (Hav. 1660 And y ful wel rede *þe* þat þou come, and ete with me). Frequently in Curs. M. as well as in other poetical pieces the clause lacks an introductory connective and appears to be separate; but the general sense shows that it is the logical object of some verb of promising, telling, warning, etc., which precedes (Curs. M. 1959-60 I warn *yow* als-sua all be-deme Ete o na best o kind vn-clene; 5431-2 Fader, trule now i *þe* hight, It sal be don als þou has tight). Another rather common survival of the O. E.

---

[86] In the last 3 instances Laȝ. B omits the accusative as superfluous.

dative constructions is that wherein the dat-acc. is dependent upon certain adjectives used as predicate adjectives (Laȝ. 2964 hu leof æm ich *þe*?). Already, however, the prepositional phrase made with *to* is found frequently. Another indir. obj., less common than those mentioned, is akin to the dative of possession or reference (Hav. 1951 Quoth Ubbe, Bernard, hwat is *þe*? Hwo haues þe þus ille maked?). And finally, an indir. obj. occurs rather frequently in subordinate clauses introduced by *as* where *as* is generally to be taken as a relative pronoun rather than a conjunctive adverb of manner (Hav. 2592 But dos mi als ich wile *you* lere).

During the first period the various forms of indir. obj. discussed above comprise about 30% of all occurrences of the dat-acc. sing. They occur in Lamb. Hom. (16x e. g. 9, 18 þa ilka wrake þe ic dude *þe*; 27, 6; 39, 34, etc.), Orm. (73x e. g. 16529 Godd ah *þe* litell mede; 18818; 4885, etc.), V. & V. (59x e. g. 85, 3 ȝif ic hadde ani þing þat *ðe* icweme wære; 99, 25; 111, 6, etc.), Kath. (18x e. g. 453; 685; 2391, etc.), Hali M. (23x e. g. 31, 26 þine banes akeð *þe*; 35, 21; 47, 14, etc.), Ancren R. (41x e. g. 96, 22; 114, 19; 238, 3, etc.), Laȝ. (262x e. g. 2262 seorwe *þe* beoð geneðe; 2964 hu leof æm ich *þe*[87]; 3020; 3185, etc.), Gen. & Ex. (13x e. g. 359; 927; 1569, etc.), O. & N. (9x e. g. 551; 715; 903, etc.), R. Poems of J (21x e. g. 1, 421; 10, 145 He haueþ bi-tauht *þe* o tresur; 10, 193, etc.), etc.

In the later period the indir. obj. aggregates only about 26½% of all the dat-acc. sing. occurrences, showing a tendency to yield its place to phrases, as suggested above. It occurs in the more prominent monuments as follows: Siriz (16x e. g. 33 ani þing þat *þe* is lef; 63; 138, etc.), H. H. (12x e. g. 75, 98 *þe* is fallen aunbesas; 114, etc.), Psalter (6x e. g. 19, 3 He sende *þe* helpe; 44, 17; 49, 12, etc.), Nor. Leg. II (105x e. g. 1, 386 I gif *þe* leue; 2, 306; 7, 104 Drusyan þat was *þe* ful dere; 10, 239, etc.), So. Leg. (206x e. g. 10, 98 ȝwat was *þe*; 10, 363; 15, 91, etc.), Hav. (22x e. g. 384; 2402, etc.), Curs. M. (223x e. g. 1722 I sal *þe* hald þat i *þe* hight; 2687; 3185, etc.), R. Glouc. (45x e. g. 1344 Wat ssolde ich *þe* more do; 2720 merlin wat is *þe*; 4076, etc.), Kil. Poems (13x e. g. 5, 88 Ich forȝiue *þe* þis gilte; 13, 2; 4, 42, etc.) and Harl. 2253 (35x e. g. G 7, 42 y synge *þe* mi song; 8, 27; 9, 25, etc.).

5. Like the direct obj., the indirect obj. is used reflexively, tho less often. In the first period I find 14 examples, constituting about half of one per cent of all occurrences of the dat-acc. sing., namely, in Orm. (3x

---

[87] As dative dependent upon an adjective *þe* is used frequently in Laȝ. Cf. also 2308; 3006; 3042; 3048; 8548; 8785, etc.

viz. 12249 þa mihhtesst tu . . . *þe* winnenn heoffness blisse; 16358 tac þu *þe* þe fowwerrtiȝ; 16366 tac *þe* Crist), Hali M. (once, 9, 9 bute þu wið breide þe, bredes *te* þat oder), Ancren R. (once, 164, 3), Laȝ. (3x viz. 14556; 30810; 31410), Gen. & Ex. (2x viz. 360; 3665 ches *ðe* nu her seuenti), Prov. of A. (2x viz. 374; 673 Ac nim *þe* to þe a stable mon), R. Poems of J (once, 10, 202) and Best. (once, 194).

In the second period this construction is even rarer; only 8 examples occur, in Digby 86 (once, 35, 66 þou nim *þe* kep), Prov. of Hend. (once, 25, 3 Del *þe* sum aboute), H. H. (once, 93 of Digby MS.), B. & S. II (once, 217) and Curs. M. (4x viz. 6409; 19815; 25895; 28777).

6. The dat-acc. used as object of a preposition is, of course, very common, replacing quite largely the O. E. genitive and dative constructions. For example the use of *þi* as an objective gen. noted above (see p. 62) is paralleled and gradually replaced by the phrase *of þe*; the older partitive gen. is almost always expressed in the thirteenth century by an *of* phrase (cf. Hav. 1442 Ilk of *you* shal haue castles ten); and even the possessive adj. is occasionally expressed by a periphrastic genitive (Hav. 1361 Lauerd . . . For the holi milce of *you*, Have merci of me; Curs. M. 4481 thoru þe help of *þe*; Harl. 2253 . G 4, 48 þe help of *þe* be me nest!).

For the first period about 20% of all dat-acc. singulars are used as object of a preposition. The construction occurs, for example, in Orm. (33x e. g. 209 to *þe*; 1042 o *þe*; 1463, etc.), V. & V. (55x e. g. 23, 10 on *ðe*; 23, 12 fram *ðe*; 33, 29, etc.), Ancren R. (51x e. g. 122, 2; 136, 4, etc.), Laȝ. (67x e. g. 3039; 8854; 13061, etc.), Gen. & Ex. (9x), O. & N. (20x), Fl. & Bl. (11x), etc.

In the second period about 33% of all are used as obj. of prep., a large part of which occur in Psalter (237x[88] e. g. 5, 4; 7, 2; 17, 30, etc.), Nor. Leg. II (153x e. g. 1, 151; 2, 50; 3, 130, etc.), So. Leg. (148x e. g. 10, 504; 15, 63; 19, 44, etc.) and Curs. M. (227x e. g. 2608; 3636, etc.). Of the other more important monuments of the period the dat-acc. sing. is used as obj. of prep. in Siriz (12x e. g. 40; 71; 81, etc.), Hav. (13x e. g. 489 Ayen *þe*; 627; 1324, etc.), R. Glouc. (40x e. g. 2250; 4002, etc.), Kil. Poems (20x e. g. 1, 101; 4, 25; 5, 101, etc.) and Harl. 2253 (52x).

7. The pronoun is used as reflexive obj. of prep. much oftener than as reflexive indir. obj. In the first period the construction occurs 24x or about 1% of all occurrences, namely, in V. & V. (3x viz. 39, 15; 41, 1;

---

[88] *Of þe* (= Lat. *tuus*) is very common. Cf. 16, 8; 50, 3 after mikel mercy of *þe;* 88, 9; 108, 26, etc.

41, 4), Kath. (once, 2051), Prayers & Hymns (once, 211, 21 and ȝif me lif in *ðe*), Woh. (once, 285, 30 tac hit to *þe*), Ancren R. (3x viz. 38, 4; 266, 16; 282, 18), Laȝ. (9x e. g. 19095; 16058; 17216, etc.), Prov. of A. (once, 673), Fl. & Bl. (2x viz. 325; 363), etc.

This reflex. obj. of prep. occurs in the later period 73x or about 2½%, chiefly in Psalter (12x e. g. 7, 10 And right sal tou rightwise to *þe*; 20, 14; 36, 34, etc.), Nor. Leg. II (13x e. g. 1, 24; 3, 62; 6, 182, etc.), So. Leg. (17x e. g. 10, 89; 18, 33; 39, 221, etc.) and Curs. M. (18x e. g. 8645; 9627, etc.).

In a great many instances the preposition follows the pronoun, usually being placed at the end of a line, often apparently for metrical reasons (cf. Laȝ. 8854 lett me speken *þe* wið[89]; Nor. Leg. II 1, 240 þou tak mi saul *þe* to; Curs. M. 5817 I bidd þe strek þi hand *þe* fra; R. Glouc. 2468 þin owe men . . . þat *þe* beþ aboute).

Sometimes, indeed, this might be deemed a case of separation of an adverbial particle from the verb rather than a preposition from the pronoun governed, but since the construction would be logically the same in either case, such a fine distinction need not cause any difficulty here.

Once the pronoun is combined with its preposition in V. & V. (75, 23 *to ðeward*).

7. The dat-acc. is also used occasionally as subject of an infinitive. For the first period 33 examples of this construction occur, about 1½% of all occurrences of the dat-acc. sing. Cf. Lamb. Hom. (once, 21, 16 and pinian þine licome *þe* hit *þe* makeð don), Orm. (9x e. g. 4948; 5250; 10129, etc.), V. & V. (3x viz. 25, 10 Ðis hali mihte *ðe* dieð ilieuen; 87, 11; 127, 31), Hali M. (4x e. g. 3, 20 ant makien *þe* to þenchen; 15, 10; 31, 23, etc.), Laȝ. (5x e. g. 3163; 7879; 16068, etc.), Fl. & Bl. (2x viz. 341 Whane he *þe* hireþ speke so hendeliche; 389), etc.

In the second period this construction occurs also 33x, but constitutes only about 1% of all examples of the dat-acc. sing. It occurs for the most part in Digby 86 (2x viz. 35, 84 He doþ *þe* raþest falle; 35, 114), Nor. Leg. II (4x viz. 7, 84; 24, 260 . 385; 28, 145), So. Leg. (5x e. g. 35, 115; 38, 73; 55, 189, etc.), Curs. M. (12x e. g. 1946 I sal do *þe* ful wel to fare; 10444; 10978, etc.) and Harl. 2253 (4x).

8. Once in the first period this subj. of infin. is reflexive in Meidan M. (231 Ant let *þe* folewen in fonston) and 4x in the second period in Curs. M. (4310 þou do *þe* stallworþli to flei; 13797; 13818, etc.).

9. A construction which is rarely found but very interesting because

---

[89] In Laȝ. the preposition frequently follows, in the case of *wið*, generally. Cf. also 8867; 8903; 13305; 17619; 32677, etc.

it is so like the combination of the dat-acc. with *self* which did develop from thirteenth-century beginnings into a stable and enduring form, is that construction wherein the dat-acc. is used with *ane*. The earlier stage where *ane* is added intensively to subject or object (e. g. *þu ane* corresponding to *þu self*) is not uncommon. (Cf. Lamb. Hom. 111, 8 *þu ane* ne brukest naut þinra welena). But the stage where *þe ane* is used as an intensive appositive to a nominative is reached only in a few southern monuments, namely, in Marh. (once, 50, 9 tu *þe ane* hauest ouergan þi feder ant ti moder), Jul. (2x viz. 22, 7 hwi leauestu ham *þe ane*; 22, 8 ne wen þu nawt *þe ane* wið þi wisdom to ouerstihen ham alle), Woh. (once, 271, 34) and Ancren R. (once, 86, 11 Ne gest tu nout *þe one*).[90]

Once, in the Harl. text of H. H., this construction seems to have reached the genitive stage corresponding to *þi self* (79 þenne þou bileuest al *þyn one* = Digby text 69 þenne þou letest *þe alone*).

10. Finally, an imported ablative absolute appears in the Psalter 3x (103, 28 Giveand *þe* to þam, gedre þai sal = Dante te illis colligent; 103, 28; 103, 28).

V. INTENSIVE-REFLEXIVE SINGULAR AND PLURAL.

I. INTENSIVE, AS SUBJECT.—1. The intensive *self*, used as an appositive to or modifier of nouns and pronouns persists thruout the century even tho it does also develop into a special compound pronoun when combined with the gen. or dat. case of the personal pronoun.

a. The intensified nom. sing., uninflected, occurs in Laȝ. A[91] (7x e. g. 7314 *þu sulf* mi, mon bicumen; 7336; 14941, etc.), O. & N. (once, 497 *þu sulf* art þar-among) and Curs. M. (once, 27960 Bot lok *þou self*, vmthinckand te þat þou in nan suilk plight be); the plur. occurs in Curs. M. (once, 14691 Bot-if *yee self* willi be blind).

b. This same intensified nom. occurs in the plur. with an inflected intensive *seluen* in Curs. M. (3x viz. 780 Als godds suld *ȝee seluen* be; 6786; 19094).

2. Once, only, the intensive of the second stage of development, namely, the dat-acc. with *self*, uninflected, is used as a simple subject, in Curs. M. (20954 nu *þe-self* es cummen here).

3. The forms representing the third stage are used in place of the simple subject more often.

---

[90] For examples of this construction in the third person see Einenkel, *Das Englische Indefinitum*, p. 177, and Maetzner, Sprachproben, I, 1, 26, note 18.

[91] Laȝ. A can be said to mark the passing of this older construction since Laȝ. B generally substitutes for the simpler *þu self* the longer *þou þi seolf*.

a. Uninflected forms are used in MS. R of Jul. (once, 22, 2), Ancren R. (once, 124, 16 ne me þe ueind . . . fulen þine soule . . . bute ȝif þi *sulf* hit makie), Laȝ. B (once, 7336), Nor. Leg. II (8x e. g. 1, 62 *þi-self* þe suth wele knawes; 1, 237; 14, 245; 17, 792, etc.), So. Leg. (once, 25, 57 ase *þi-sulf* miȝt i-seo) and Curs. M. (11x e. g. 1666 *þi self* sal be þe maister wright; 9568; 26311, etc.).

b. A similar construction but with the inflected form *seluen* occurs in Nor. Leg. II (once, 16, 456 now may *þi-seluen* se).

II. INTENSIVE, AS OBJECT.—1. The forms of the first stage, viz. dat-acc. with *self* (*-e, -en*) are, as would be expected, used frequently as an intensified objective construction. *a.* The uninflected form *þe self* and its variants occur as dir. obj. in Orm. (once, 5288 tanne shallt tu muȝhenn sen O whillkess kinness wise *þa sellf* birrþ lufenn oþre menn) and Curs. M. (once, 28638), as indir. obj. in Hymns of CCCO. (once, 3, 18 ihesu crist þin elpi sune þe is *þe seolf* iliche) and Curs. M. (19576), and as obj. of prep. in Orm. (2x viz. 1190; 1288), Woh. (once, 271, 9), Gen. & Ex. (once, 934 Of *ðe self* sal ðin erward ten) and Curs. M. (once, 12804 O *þe-self* quat wil þou sai?) while a corresponding plur. form is used as dir. obj. in MS. B of Jul. (once, 18, 1 ne nullich leauen ower read þat forreadeð *ow seolf*) and as obj. of prep. in So. Leg. (once, 21, 38 On *eov-sulf* it scholde nouþe bi-falle).

b. Singular forms inflected with *-e* are used as dir. obj. in MS. C of Horn (once, 49 þi lond folk we schulle slon . . . And *þe selue* riȝt anon) and as indir. obj. in O. & N. (once, 1284 for al þat þu me seist for schame, euer *þe seolue* hit turneþ to grome); a corresponding plur. form *eow selfe* is used as dir. obj. in Lamb. Hom. (once, 15, 2 eower lond ic wulle friþian and *eow selfe* meȝhan and bi-werian).

c. Singular forms inflected with *-en* are used as dir. obj. in Woh. (once, 271, 9 Halde iwile þa to þe mi leof for þe self luue *þe seluen*) and Laȝ. A (4x viz. 9840; 13115; 22579; 25312 Ah *þe seoluen* he wule binden) and as obj. of prep. in Jul. (once, 60, 4 ilich to *þe seoluen*), Prayers & Hymns (once, 195, 64 Er we to *þe suluen* kumen), Laȝ. A (4x viz. 15851; 26386; 28146; 29063) and Gen. & Ex. (once, 1319); the corresponding plur. forms are used as dir. obj. in MS. R of Jul. (once, 18, 1) and Lamb. Hom. (once, 13, 33) and as obj. of prep. in Kath. (2x viz. 1291; 2353).

2. The forms made up with gen-poss. are not used very often as mere intensive substitutes for an objective case. The uninflected sing. is used as obj. of prep. in Curs. M. (once, 8309 þat mai noght thoru *þi-self*

be don) while the uninflected plur. occurs as obj. of prep. in Nor. Leg. II (once, 35, 462 þis kist es lyke Unto *ȝoure self*). No inflected forms are used in exactly the same way.

Sometimes when the above-noted constructions take the place of the simpler forms of the pronoun they mean probably little more than the simple *þu* or *þe* would mean (cf. Nor. Leg. II 34, 749 *þi self* sall se, or So. Leg. 21, 38 On *eov-sulf* it scholde nouþe bi-falle); in many instances, however, an attempt is made to contrast or emphasize the personality of the one addressed. This is especially true of the forms compounded with the gen-poss. (cf. Jul. MS. R 22, 2 nulli þe na mare uuel þen *þi seolf* waldest). Here the speaker compares his own attitude with that of the person addressed.

It is not always possible to decide in such a construction as the one last cited whether the possessive plus *self* was regarded as a pronominal entity or whether the intensive *self* was considered a substantive modified by the possessive. Probably the latter was often felt to be the case; certainly, in a few instances, the context proves it to be so. Cf. P. Mor. 30 Ne beo þe leouere þan *þi seolf* . . . þi mey ne þi mowe; Nor. Leg. II 1, 90 þi preching proues *þi-self* a fole; 32, 142 On *þi-self* sal be sene þi sin; Curs. M. 1306 Ga to þe ȝatte . . . and late þi hed inwar, *þi self*[92] witoutte; R. Glouc. 6301 wel more þan þi lond *þi sulue* ich wilni ywis).

This emphasis of the *self* part of the combination doubtless explains why the dat-acc. with *self* was used so rarely as subject while the gen-poss. with *self* was so used quite often. Indeed the whole question of the shift in the intens-reflex. pronoun from a dat-acc. compound to a gen-poss. one is surely concerned with this apparently growing feeling that *self* was not merely an intensive pronominal adjective as in O. E. but a noun in some way designating the *ego*.

III. INTENSIVE, AS APPOSITIVE.—This construction shows an advance beyond the two above-noted in that the intensive compound is a separate unit used in apposition to a simple pronoun which is usually expressed.

1. A plur. intensive composed of *yee* and the uninflected *self* is used appositively in Curs. M. (once, 6096 In mining sal ye hald þis dai, *Yeeself* and your oxspring ai) and, if the subject of the imperative be understood, in Laȝ. A (once, 15051 hældeð *ȝe seolf* eowre lond).

2. The forms made up with the dat-acc. are used more frequently as appositives. *a.* With the uninflected grade of the intensive *self* they occur in the sing. in Orm. (10x e. g. 4162 ȝiff þu *þe sellf* wel nim-

---

[92] The scribes of MSS. F, G, T substitute 'body' for 'self.'

esst gom; 4666 Lac nu *þe sellf;* 5020, etc.), Kath. (once, 2378 milde Iesu þat art *te seolf* meidene mede), Marh. (once, 16, 31) and Woh. (once, 279, 5 þu *þe self* was poure); the corresponding plur. forms are used appositively in Ancren R. (once, 226, 19 ȝe beoð tures *ou sulf*), So. Leg. (once, 47, 357) and Harl. 2253 (once, W 5, 60).

b. Plural forms inflected with *-e* occur in R. Poems of J (2x viz. 1, 398 Nymeþ hym *eu seolue* and on rode do; 3, 299).

c. Sing. forms inflected with *-en* are used in V. & V. (once, 65, 7), Kath. (once, 634), Laȝ. A (once, 19872 and bæd þat þu sculdest a Brutte *þe seoluen* halden laȝen rihte), Prov. of A. (once, 547 hwile þine dages dugen, and þu *þe selwen* liue mowe), and Curs. M. (once, 5429); corresponding plur. forms are thus used in Lamb. Hom. (2x viz. 35, 20-21 forþi leofemen understondet *eouseluen* þa hwile ȝe mahten. Nis þas weorld nawiht ȝe hit iseoð *eow seluen*), V. & V. (once, 93, 23 Godes temple is hali, and ðat ȝe bieð *ȝeu seluen*), Ancren R. (once, 406, 23) and Laȝ. A (once, 5802).

3. *a.* Intensives of the third or gen-poss. stage (e. g. *þi self*) occur rather often as appositives with the uninflected *self*. See Laȝ. A (2x viz. 17963; 31097), Laȝ. B (5x e. g. 7314; 14941, etc.), R. Poems of J (once, 1, 350 Hweþer seystu hit *þi seolf* . oþer oþre hit seyde by me), Digby 86 (once, 35, 61 be þou nout *þi self* ouncouþ), Psalter (2x viz. 50, 9; 101, 28), Nor. Leg. II (2x viz. 19, 254; 35, 42), So. Leg. (2x viz. 10, 194 and stond *þi-sulf* with-oute; 27, 2032), R. Glouc. (3x viz. 1082; 4006; 4918) and Harl. 2253 (once, W 1, 18).

b. A sing. with inflected (*-en*) form may be construed as an appositive once in Curs. M. (4604 lok *þi-seluen* wit resun) altho it is possible to take it as a reflexive dir. object.

It will be noted that all the intensive appositives cited are used with the subject, none after any objective constructions. In the middle stage of development of the new intens-reflex. pronoun the use of *þe self,* for example, after *þe* would make an unpleasant repetition of *þe* and so the simple pronoun falls out.

IV. Reflexive.—The uses of these various combinations as reflexive pronouns are more common than the intensives. 1. The dat-acc. compound with the three inflectional grades of *self* occurs as follows:

a. Sing. pronouns with uninflected forms of *self* are used as dir. obj. in Hali M. (2x viz. 27, 1 þe . . . þat forschuppes *te self*; 27, 14) and Ancren R. (3x viz. 100, 12; 100, 18; 102, 16), as obj. of prep. in Hali M. (2x viz. 29, 14 for *þe self*; 35, 17), Woh. (2x viz. 273, 9; 287, 3) and Curs. M. (once, 12804 O *þe-self* quat wil þou sai?) and as reflexive subj. of infin. in Curs. M. (once, 18278 Ill has þou don *þe-self* to spede); plur. forms corresponding to the above forms are used as dir. obj. in Marh. (once, 54b, 10 as ȝe luueð *owseolf*), Ancren R. (2x viz. 46, 9; 186, 28) and Hav. (2x viz. 2425; 2595), and as obj. of prep. in Ancren R. (3x viz. 22, 21; 92, 22; 106, 6) and Curs. M. (2x viz. 16653 wepe yee noght for me, Bot on yur childer and on *yow-self*; 28026).

b. The sing. forms inflected with *-e* are used as dir. obj. in Exp. Pat. Nos. (once, 200 luue þine euecristene . . . alswa *þe solue*) and as indir. obj. in B. Rule (2x viz. 125, 24; 143, 14); the corresponding plural forms are used as dir. obj. in Harl. 2253 (once, G 17, 2 ȝe þat walleþ *ou selue* yknowe) and as obj. of prep. in MS. C of Horn (once, 364 Wiþ him ȝe wolden pleie Bitwex *ȝou selue* tweie).

c. The forms inflected with *-en* are used much more often as reflexives. Sing. forms occur as dir. obj. in Exp. Pat. Nos. (once, 40 Luuien þi cristen euenling Alswa *þe seoluen*), Lamb. Hom. (once, 27, 36 þu wreiest *þe seolfen*), Orm. (14x e. g. 4469; 5007; 5085, etc.), V. & V. (18x e. g. 37, 25; 59, 9; 67, 5, etc.), Kath. (once), Jul. (once), Woh. (4x), Ancren R. (once, 12, 19 dem *ðe suluen* euer woc), Prov. of A. (once, 562) and Curs. M. (3x viz. 4362; 10435; 25315), as indir. obj. in Orm. (once, 5109 annd god don ec *þe sellfenn*) and Laȝ. A (once, 5051) and as obj. of prep. in B. Rule (once, 17, 5), Orm. (19x e. g. 4859; 5065; 5103, etc.), V. & V. (4x e. g. 65, 7; 103, 17; 107, 2, etc.), Marh. (3x viz. 4, 19 haue merci ant milce of *þe seoluen*; 7, 17; 19, 15), Prayers & Hymns (once, 195, 64), Woh. (once, 271, 23), Ancren R. (once, 340, 12) and Laȝ. A (once, 17938 þenc of *þe seoluen*). The corresponding plur. forms are used as dir. obj. in Trin. Hom. (once, 115, 19 and ech gate untineð *giu seluen* to-genes þe king[98]), V. & V. (2x viz. 79, 21 Wa ȝeu ðe healdeð *ȝeu seluen* for wise; 95, 28), Marh. (once, 18, 26), Ancren R. (3x viz. 98, 10; 186, 2; 422, 1), Laȝ. A (once, 12514), Digby 86 (once, 35, 8 ȝe þat wilen *ou seluen* cnowe), as indir. obj. in V. & V. (once, 123, 5 ȝie ðe seneȝin be ȝew seluen doð scame *ȝew seluen*) and as obj. of prep. in Trin. Hom. (once, 195, 4), Orm. (once, 949), V. & V. (3x viz. 53, 33; 79, 21; 123, 5) and Ancren R. (4x viz. 188, 24; 346, 12; 412, 17; 430, 5).

2. The later stage of the development of this reflexive pronoun of address is also well represented in all three inflectional grades.

---

[98] Morris's translation of this passage ("and each gate open yourselves") leaves the construction uncertain. He apparently assumes that *giu seluen* is an intensive appositive, whereas in reality it is the reflexive obj. of the verb, the whole translating closely *et elevamini portes eternales*.

a. Sing. forms with uninflected *self* are used as reflexive dir. obj. in Ancren R. (once, 124, 9), Nor. Leg. II (once, 6, 406 *þi-self* byse), So. Leg. (4x viz. 9, 1147; 15, 339 ȝif þou woldest . . . *þi-seolf* martri for mi loue; 19, 42; 48, 148) and Curs. M. (7x e. g. 16246 to bring *þi self* a-wai; 16255; 26581, etc.), as indir. obj. in Ancren R. (once, 294, 11 ȝif *þi sulf* . . . one smerte discepline) and Digby 86 (once, 35, 88 þou dost *þi self* wel muchel wrong), and as obj. of prep. in Ancren R. (3x viz. 180, 17; 276, 16; 336, 16), Nor. Leg. II (2x viz. 17, 754; 35, 394) and So. Leg. (3x viz. 10, 379 þench on *þi-sulf*; 25, 154; 30, 43). The gen-poss. plur. forms with uninflected *self* occur only as dir. obj. in Nor. Leg. II (once, 2, 157 Wirkes to wyn *ȝowre-self* fro wo) and in Curs. M. (2x viz. 26367 Wa yow þo *your-self* sa bi-suikkes; 26370).

b. Sing. gen-poss. forms with the second or *-e*-grade of *self* are used as reflexive dir. obj. in R. Poems of J (3x viz. 1, 141; 1, 452 Help nv *þi seolue*; 1, 457), as indir. obj. in Harl. 2253 (once, G 17, 82 þou dest *þy selue* muche wrong) and as obj. of prep. in B. & S. II (once, 208 Nouȝ wiþ *þi selve* thouȝ art forlorn). No plur. forms occur.

c. Sing. gen-poss. forms with the third or *-en*-grade of *self* are used as dir. obj., reflexively, in MS. B of Kath. (once, 1454), Ancren R. (once, 120, 1 tu schalt demen *þi suluen* wod) and Laȝ. A (once, 17899 fonde *þi seoluen*), as indir. obj. in Ancren R. (once, 304, 10 ȝif þu witest eni þing þine sunne bute *þi suluen*) and as obj. of prep. in Ancren R. (once, 296, 18 Understond þis bi *þi suluen*). No corresponding plur. forms occur.

V. Reciprocal Reflexive.—In one instance cited above the reflexive obj. of a preposition is a reciprocal as well (Horn MS. C 364 Wiþ him ȝe wolden pleie Bitwex *ȝou selue* tweie).

An examination of the constructions of the various intens-reflex. forms, as given above, fails to produce any rules regarding the use of the forms with *self, selue* and *seluen* in the three grades of inflection. They occur early and late in the period, with sing. and plur. meaning according to the number of the pronoun which forms the first part of the construction, and in almost any pronominal construction.

Perhaps the most notable tendency in the use of this gradually evolving intensive-reflexive pronoun is to use it less often instead of a simple pronominal subject and more frequently as an appositive to it or as a reflexive in objective constructions.

VI. NOMINATIVE DUAL.

The nom. dual is found, for the most part, in the same constructions as the nom. sing. or plur. It is used as subject before a declar. verb 34x, namely, in Lamb. Hom. (once, 93, 5), Orm. (16x e. g. 4498; 6210 ȝiff þatt *ȝitt* endenn; 12362, etc.), V. & V. (3x) and Laȝ. A (12x e. g. 5093 *ȝitt* buð mine leoue sunen; 9498; 17061, etc.). Transposition occurs in Orm. (2x viz. 6224; 13043). The nom. dual follows a declar. verb in Orm. (once, 6208 þa follȝhe *ȝitt* tatt narrwe stih), V. & V. (once, 97, 31) and Laȝ. A (once, 5019 ne beon *ȝit* bute tweien); it also follows an interrog. verb in Orm. (3x viz. 12732 Whatt seke *ȝitt*; 12966; 12968). Twice the nom. dual is accompanied by *baþe* in Orm. (6202; 6206).

VII. GENITIVE-POSSESSIVE DUAL.

1. The only gen-poss. dual form found inflected with *-e* modifies a sing. noun used as subjective complement in Laȝ. A (5623 ich *inckere* freond wurðe).

2. The uninflected forms modify sing. or plur. nouns used as dir. obj. in Orm. (6x e. g. 4497 annd cwellenn *ȝunnkerr* sawless; 6204; 6244, etc.), Laȝ. A (once, 26541 haldeð þer *unker* rune) and Gen. & Ex. (once, 398), as sing. or plur. obj. of prep. in Orm. (4x e. g. 6205; 13019 inn *ȝunnkerr* herrte; 13045, etc.) and Hali M. (once, 3, 22 Hu muche god mihte of *inker* streon waxen) and as sing. subject in Laȝ. A (once, 5102 *incker* moder inc hateþ).

3. The uninflected forms of the gen-poss. dual are used as gen. of limitation in Orm. (once, 6183 to *ȝunnkerr baþre* gode), as objective or possessive gen. in V. & V. (once, 97, 30 þat godd, *ȝinker* sceppend, mihte . . .) and as partitive gen. in V. & V. (2x viz. 95, 13 and hwaðer *ȝunker* hes tobrecð; 97, 26 ðat *ȝunker* noðer ne scal habben . . .), S. Warde (once, 265, 32 Eiðer of ow haueð his stunde to speokene . ne nis *incker* noðres tale to schunien in his time), Hali M. (once, 31, 18 swa þat *inker* eiðer heasci wið oðer), Laȝ. A (once, 32170) and Hav. (once, 1882 Gripeth eyþer *unker* a god tre).

Once the gen-poss. dual is reinforced with *baþre* in Orm. (6183, quoted above).

VIII. DATIVE-ACCUSATIVE DUAL.

The constructions of the dat-acc. dual correspond in general to those of the dat-acc. plural.

1. The most common construction, as dir. obj., occurs in Orm. (9x e. g. 6209; 6216; 13014, etc.) and Laȝ. A (4x viz. 5102; 5616; 5621 ich wulle . . . makien *inc* riche; 5619). Also as reflexive dir. obj. the dual dat-acc. is used in Orm. (2x viz. 4493; 6206).

2. A dual indir. obj. occurs in Lamb. Hom. (once, 93, 5), Orm. (3x

viz. 13012; 13020; 13026), V. & V. (once, 97, 13 þat ic mote fulȝin and buhsum bien *ȝing* bam), Laȝ. A (5x e. g. 5636 and þis [ich] *inc* bi-seche; 18105; 26542, etc.), Gen. & Ex. (once, 2830 and ic sal red *Gunc* boðen bringen read and sped) and O. & N. (once, 1733). Once also a reflexive indir. obj. occurs in Orm. (8663 makenn *ȝunnc* to fode).

3. As obj. of prep. the dual is used in Orm. (2x viz. 6228 bitwenenn *ȝunnc* and hemm; 6247), V. & V. (once, 97, 30 ðat ðis hali temple [be] arard on *ȝinc*), Marh. (once, 21, 33 bi his nome . . . þat glit of *inc* baðen) and Jul. (once, 18, 14). Also a reflexive obj. of prep. is used in Orm. (2x viz. 6157 Swa biddesst forr *ȝunnc* baþe; 6207).

4. In one instance the dat-acc. dual is a reflexive subject of the infinitive in Orm. (5148 tu dosst *ȝunnc* baþe . . . to gilltenn).

5. Once the object of a preposition is also reciprocal in V. & V. (97, 26 ȝit winneð *ȝung* bitwen).

The dat-acc. dual is accompanied by *baþe* in Orm. (5x viz. 4495; 5148; 6157; 4493; 6247), by *baþen* in Marh. (once, 21, 33 quoted above), by *boðen* in Gen. & Ex. (once, 2830 quoted) and by *bam* in V. & V. (once, 97, 13 quoted).

IX. INTENSIVE-REFLEXIVE DUAL.

The one form found in literature of this period is used as dir. obj. in Laȝ. A (695).

SECTION IV. SEMASIOLOGY.

Most, if not all, of the semasiological problems that arise in connection with the thirteenth-century pronoun of address centre about the general question of mixed usage. As we shall see, later, passages in which a plural pronoun is consistently used in addressing an individual are rare, but passages in which the speaker uses both sing. and plur. forms variably are common and sometimes quite perplexing. Hence these passages showing mixed usage will form the greater part of the subject matter of this section.

I. PRONOUN OF CONFESSIONAL AND PULPIT.

To anyone reading the literature of the period under consideration it must soon become apparent that the writers of the thirteenth century, most of whom seem to have been by nature or profession preachers, had two quite distinct attitudes toward their readers or hearers. The one attitude was decidedly informal and is best displayed in the homiletic passages where the preacher warns or exhorts the individual, using an informal singular which might be termed the homiletic or confessional singular because it occurs so often in passages where the poet treats the hearer or reader as a penitent come to confessional. The other attitude was more general, more formal, and appears most often in the narrative passages where the preacher or writer speaks either with a consciousness that he is in the pulpit or else with an ambition, seemingly, to imitate the minstrel in the hall or castle. The pronoun of the confessional prevails, to the exclusion of the other, in B. Rule, V. & V., where the writer represents himself as Reason preaching to the soul, Hali M., Laȝ. A (e. g. 9382; 9976; 14824; 19931, etc.), Gen. & Ex. (e. g. 45; 1260, etc.) and Dream-Book,[94] and to a less marked degree in Orm. (524x to 28,[95]), Lamb. Hom. (143x to 104), Ancren R., R. Poems of C & J, Digby 86, Curs. M., etc. On the other hand the plural of the pulpit prevails exclusively in Fl. & Bl., H. H., Nor. Leg. I, Horn, Hav., R. Glouc., Jos. and Marina, and is generally used in Nor. Leg. II, So. Leg. and Harl. 2253

---

[94] The form *ȝe* in l. 73 is probably either a mistake or to be understood as an adverb.

[95] Only the nom. forms are included; out of 709 nom. forms, these 552 are used in addressing the reader or readers.

(e. g. P 1, 1; 6, 152; W 5, 60, etc.). The attitude of the minstrel is very plain in most of the last named group (cf. Hav. 1 Herkneth to me, gode men). In some of these pieces the poet was probably a minstrel, but it is hardly necessary to emphasize the fact that in at least 75% of the monuments studied, which comprise much more than that percentage of literature, the poet was unquestionably in religious life as monk or priest.

If these facts, namely, that most of the writers were probably also given to preaching and that a preacher might speak sometimes as one at confessional and at other times with the formality of the pulpit, be borne in mind, the intermingling of sing. and plur. forms in the monuments above named is not as a rule very perplexing.

In the Ancren R., since the entire discussion is presumably addressed to the three sisters in common, one would expect always a plur. pronoun. At the beginning of the piece in general and of every new division in particular the plur. is used (cf. 4, 14; 12, 26; 16, 9; 50, 1, etc.). But when the writer becomes intent upon his admonition he lapses into the use of the sing. pronoun, a usage apparently associated with a more intimate or personal feeling on the part of the preacher (cf. 58, 21; 98, 29, etc.). Indeed in almost every instance where a discussion begins with the plur. the lapse to the sing. follows, and sometimes in very short space (cf. 102, 26 and 30; 118, 1 and 26; 256, 2 and 3; 274, 16 and 21, etc.). Often the lapse seems to be the result of the use of a quotation in which a sing. form occurs (cf. 346, 12, 19 and 23 where the priest's words to the penitent are quoted). Frequently, also, the lapse is from plur. second person to sing. fem. third, then to sing. second (cf. 286, 26, 28 and 290, 1). In such cases the nun, a third person, is held up to the sisters as an example or warning, and then a moment later her identity is merged with that of one of the sisters and she is herself admonished. Toward the end the writer himself seems to become slightly bewildered for he says, in speaking of atonement for sins, "And þeonne sum lutel hwat he mei leggen on *þe* oðer on *ou*" (p. 346, ll. 22-23). Evidently he was conscious of his illogical use of the sing. pronoun in writing for the sisters.

The earlier and later parts of Curs. M., differing as they do in the character of the matter treated, illustrate in an interesting way the pronoun of the pulpit and that of the confessional. In the earlier parts of the poems where narration predominates the plural prevails and the poet uses often the expressions common in the later metrical romances (e. g. 9375 For yee haf, lauerdinges, wel herd; 13214; 13360, etc.); in the latter part where homiletic discourse prevails, the sing. pronoun is more common.

II. AMBIGUOUS USAGE.

When the change in the number of the pronoun occurs in a single passage instead of in different parts of the poem the exact signification of the pronoun is sometimes hard to determine. In a number of passages occurring in thirteenth-century literature the plur. forms in such ambiguous passages appear to be early examples of the *pluralis reverentiae* or as we shall style it for early English, the *formal singular.* When taken, however, in the setting of the context such plurals often prove to be plural in meaning as well as in form.

1. One class of these ambiguous pronouns results from an abrupt shifting on the part of the preacher from the sing. of the confessional to the plur. of the pulpit or vice versa. Cf. Orm. (1166-71 All hu *ȝe* muȝhenn lakenn Godd gastlike i gode þæwess Wiþþ all þatt Judewisshe lac þatt *ȝuw* her uppe iss shæwedd; Ȝiff þatt *tu* follȝhesst soþ meocleȝȝc annd soþ unnskaþiȝnesse; 3222-24; 4384-89; 6096-6102; 6723-24 Swa summ *ȝe* littlær herrdenn . annd *tu* mihht lakenn Jesu Crist . . . ; 18801-07, etc.).

2. In a number of the earlier, but especially in the later monuments, the real number of a plural form is at times doubtful because a situation occurs similar to that which, as Ehrismann[96] and others have shown, makes it difficult to establish for early Latin the real beginnings of the use of the *pluralis reverentiae.* That is to say, an individual is addressed as representative of political power or religious belief shared by others.

Once in V. & V. Body addresses Reason with a plur. (97, 1 þeih *ȝie* be gode rihte unwurð helden of me). Probably, however, the Soul is also included along with Reason.

In the midst of one of Katherine's speeches to the Emperor (Kath. 207-305) she uses plur. forms several times (275-6; 278; 301). She probably wishes to include along with the Emperor all heathen of his faith. So also in the Emperor's reply to Katherine (313-352) plur. forms occur (321; 344; 346-7). But since he uses an informal sing. in the remarks of a more personal nature (312 ff.) he doubtless thinks of Katherine as a representative of her sect when he addresses her with the plur. pronoun. Moreover the Latin version shows a similar shift of number so that even tho this were an actual occurrence of the formal singular it would not have much significance for Middle English usage.

In Laȝ., in a few instances, an interchange of sing. and plur. forms occurs in a single passage where traces of formal address might be suspected; but in each instance the pronoun can also be assumed to include more than the one addressed. Brutus says to his prisoner Anacletus (vv. 700-703), "Do swa . . . & *þe* scal beon þe bet . *ȝe* scullen habben lif & leomen: & beon mine leofe freond." Just before this he has used a dual form (v. 695), so he evidently includes Anacletus's lord who is also a prisoner. It is clear that the scribe of B took this to be plur. for he changes v. 701 to read: and þe bet *ȝou* sel worþe.

---

[96] Ehrismann, Dutzen und Ihrzen im Mittelalter.

In Laȝ. 10968-72 where the British king says to the Roman leader, "he hæfde . . . muchel of *þine* cunne of-slaȝen & mid strengðe *eow* at-halden wolde þat gauel of þissen londe & muchele scome he *eow* dude," he probably uses the plur. forms to include the Romans generally.

Likewise vv. 13887-93 show an interchange of sing. and plur. forms which can be explained in the same way. When Vortiger says to Hengist (v. 13887), "Ich ileue *þe* cniht," he refers to Hengist's personal narration, but when he says (vv. 13889-90), "& wulche beoð *æoure* i-leuen: þat *ȝe* on ileueð," he undoubtedly refers to the Saxons of whom Hengist is the official representative.

In Gen. & Ex. a plur. form is used several times in addresses to individuals where the context implies that others are included. The tempter addresses Eve but includes Adam (324 ff.), Pharaoh addresses Moses as representative of the Hebrews (3055 ff.) and God likewise speaks to him (3237 ff.).

In Nor. Leg. II persons of official standing are addressed with plur. pronominal forms four different times where this uncertainty exists as to whether the individual is meant or the official group of whom he is chief. (1) The Jews address Constantine (14, 69 ff.). (2) Simon Magus, who usually addresses the emperor informally, shifts once to the plur. form (16, 475). One can easily assume that he refers to more than the emperor. (3) James addresses Hermogines, once a persecutor, now a convert, with the informal or common sing. except in one line (19, 323), where it is probable that others are included. (4) St. Laurence addresses Valerian with *zow* once (22, 111) but may include the emperor whom Valerian represents.

In So. Leg. similar passages occur which can be similarly explained. (1) Katherine, again, uses plur. forms in speaking to the emperor (25, 39-48) and the emperor generalizes in his rather sarcastic reply (25, 51-2 And we schulle betere i-leue alle men: and more it wole beo note, þane ani fol womman ase *þou* art—: for *ouwer* bolt is sone i-schote). (2) Becket addresses Sir Reynaud who is accompanied by other knights, with plur. pronouns (27, 1993-2000). (3) Likewise the voice of God comes to a bishop who, with other folk, has been looking about for a new bishop of Mirre (37, 75-78). (4) St. John says to a knight of England (60, 510), "Wiend . . . ȝwane *þou* hom comest: to Edward, *eower* king). (5) Bartholomew addresses the king likewise (55, 117-122), etc., etc.

Frequently, in Curs. M., a speaker addresses an individual, then suddenly seems to include others. Sometimes this change is anticipated by the requirements of the situation, at other times it might be regarded as a shift to formal address but probably is not. Cf. the speech of God to Abram (2360 ff.), of the Lord to Sarah (2726-30), of Jacob to Joseph and, probably, Joseph's sons (5453 ff.), of the angel to Joachim (10355-363 'Maria' sal *þou* do hir call . . . And sco sal bere *your* saueour), of Architriclin to the butler (13408-415), etc. In none of these is the relation of the speaker to the one addressed such as to call for formal address.

When Androgeus, in R. Glouc. (v. 1341), uses one *ye* among many sing. forms in addressing the Roman emperor it is likely that he includes with the emperor his people whom he represents. The same applies to the speech of the child Merlin to the king (2757 Sire king wi lete *ȝe* mi moder . & me biuore *þe* lede?).

3. A third cause of this shifting without very clear reason from sing. to plur., or vice versa, lies in the habit of some writers of using certain more or less stereotyped phrases. This is especially the case in Orm. (cf. 234 and 245 þat witt *tu* wel to soþe . . . Her habbe icc shæwedd *ȝuw* summ del; 1124-30; 4980-82; 5620-24; 8714-20, etc.).

4. Finally, some of these ambiguous plurals can be traced back to Latin literature which the M. E. writer has paraphrased or translated. One example occurs in B. Rule (5, 14-19 God almichtin þus to *þe* cwyð: "Gyf *þu* abben wylle soð lif and ece, ***heald þine*** tunge fram yfelre spece and ***þine*** lippe noþing focenlices ne specen; ***abuh*** fram ywele and ***do*** god; ***sech*** sibbe and *folge* hyre . þo *ye* þus doð, mine eagen buð ofer *eow* and mine eare æt *eower* gebedu and ær *ge* me to clupian, i cweðe: Efne nu ic eom gearue to *eower* nude"). The Latin version printed parallel to this in Schröer's edition shows exactly the same shifting in the number of the pronoun; moreover the Scriptural passage (Ps. 33: 13ff.) of which this is a free translation shows the same change from sing. to plur. but with a change of person as well. Evidently, then, the B. Rule cannot be credited with a first occurrence of the *formal singular,* but this must be considered merely one of those numerous instances where the writer ad-

dresses one, then more than one, shifting from the more intimate, personal style to the more general address.

Once, in Trin. Hom. (137, 18 ff.) a shifting occurs, resulting from the fact that the writer translates literally an apostolic admonition addressed to several, and then he himself enlarges upon it using a sing, form of the pronoun of address.

In V. & V. Reason in addressing the Soul shifts from the usual sing. temporarily to the plur., apparently thru the influence of a Latin quotation (89, 30 ff. Nolite fieri, et cetera, 'Ne bieð ȝelich ðe horse ne ðe mule, ðe ne habbeð non andȝet!' Ac *nemeð* ȝieme ouer alle þing te *ȝeure* herte . . . 33ff. All ðare hwile ðe ð*u* art on ðese earme liue, ð*u* art on muchele ifihte).

From the above examples of more or less ambiguous usage an idea can be gained of the difficulty to be experienced in attempting to fix exactly the time when the formal singular came into use.

III. THE FORMAL SINGULAR.

After all these cases of uncertain meaning have been explained there is left still a small residuum of occurrences in which the pronoun really illustrates the use of a formal singular in the thirteenth century. The first occurrences are probably those in Gen. and Ex., approximately 1250 A. D., and the climax is reached for the century in So. Leg. and Curs. M. In other words an East Midland monument furnishes the first timid examples of it, while the two monuments that display the freest use of it for the century represent the Northern and Southern dialects respectively. But these facts must not be taken as conclusive evidence that the use of the formal sing. began in East Midland English nor that it spread most rapidly in the far North or the southern part represented by MS. Laud 108, for the literature to which we have access is by no means uniformly representative of all sections or dialects. Moreover some of the examples which will be cited later must not be taken very seriously for they are almost isolated occurrences in some cases.

1. Political or social inferiors to superiors.

a. As would be expected the most common, tho not the earliest, occurrences of formal pronouns of address are in speeches to kings and other rulers. In Nor. Leg. I Peter addresses Nero once with a formal sing. (1, 299) altho he later lapses into the use of the common sing. In Nor. Leg. II Abbanes, the steward, in reporting to his master, the king of India, uses the formal sing. (4, 110-112), and again a servant addresses the emperor formally once (34, 513). In So. Leg. Thomas Becket in addressing the king shifts once from the common to the formal sing. (27, 462). Everywhere else, however, he uses the common sing. in speaking to the king. The speech of the courtiers to the king in the same legend (27, 979-988) starts with *ȝe* but at once lapses to the common sing. When the bishops address the king they use both the common and the formal sing. (27, 1003-11 Sire heo seiden, *ȝe* beoth a-nuyd: and þat us for-þinchez sore; For-ȝif us þat *ȝe* on us berez: We nellez *þe* mis-don non more . . . Fur-ȝif us *þine* wrathþe, we biddez *þe*: ant to rome we wollez wende to binimen him is Erchebischopriche: and ase a wrechche him schende: Puyrliche forsuore we schullen him preoui: sire king, bi *eovwer* rede). In the speech of Sebastian to the emperor (28, 59 ff.) a shift occurs from sing. to plur. forms similar to that in the speech of Katherine to the emperor,[97] but the remarks of Sebastian are too personal to permit of the pronoun's being understood as plural. In Hav. the people show their respect for Queen Goldeborw by using the formal sing. (2797-2807). In Curs. M. Joseph, in addressing the king, starts formally but lapses immediately into the use of the common sing. (4557 ff.). So also the king's counsellors use both the common and the formal sing. in speaking to him (5503-5510). Two midwives address the same king likewise (5556-5562). Farther on in the poem David is addressed both informally and formally by a squire (7719-22), by the people (7788) and by the four Saracens (8094-8115). A woman addresses King Solomon with both forms (8659-8678) and the Jews, finally, use the formal sing. in speaking to Pilate. In R. Glouc. a maiden uses a formal sing. in addressing King Henry (8884 Sire heo sede wel ichot . þat *ȝoure* herte vpe me is).

b. Only rarely do servants address their masters with the formal sing. One or two passages have been cited where the master was also the king or emperor. In Nor. Leg. I Eufemian is addressed by his knave with a formal sing. (2, 487 ff.). In So. Leg. a servant addresses Gilbert Becket formally (27, 77). In Curs. M. a servant addresses Abraham formally (3237-3239) and the same servant is addressed by Rebecca, who does not know him, with both the formal and the informal sing. (3315-18). A messenger addresses Jacob formally at first but when the old gentleman begins to call bad names, all formality ceases (5141-5152).

c. Various persons of lower rank recognize the higher rank of the person addressed by using an occasional formal sing. Jacob's sons, in Gen. & Ex., ignorant of the real identity of Joseph, address him formally when they meet him in Egypt (2259-63 Louerd he seiden ðo euerilc on, *Gur* siluer is *gu* brogt a-gon, It was in ure seckes don[98]). In So. Leg. the bridegroom at the wedding feast at Cana uses the formal sing. in speaking to Architriclin[99] (9, 1768). A Jew, detected by a Christian man in evil-doing, addresses his accuser with a conciliatory formal sing. (10, 535 ff.). Havelok, while a beggar, addresses the cook with formal sing. (909-920). Bernard is addressed by one of the thieves with *ye* and *-tu* both (1786-89). In Curs. M. the people speak with formal sing. to Potiphar's wife (4395 Lauedi, þai said, wat aleis *yow?*).

---

[97] See page 83.

2. *To religious superiors, saints, etc.*

The aged bishop Martin is addressed by his devoted people, in Nor. Leg. II, with what may be very fitly termed the *pluralis reverentiae* (31, 193-196). In So. Leg. when the delegation of bishops address the pope (27, 1263-1334) they mix common and formal sing. pronouns, but when Becket pleads with the pope he keeps to the formal sing. quite consistently (27, 1373-1410). Becket is himself addressed by his clerk, Master Bernard, with a mixture of common and formal singulars (27, 1685-88). When the abbot Beryn says in the course of his narration to St. Brendan (36, 25), "ase ich it telle *ov*" it is necessary to understand *ov* as singular; and yet this probably deserves less emphasis than some other occurrences because the phrase is a stereotyped one, used by the poet to his readers often and slipped in here perhaps almost unconsciously because the abbot becomes temporarily the story teller. Once also in So. Leg. an old man addresses St. Peter formally (47, 239-44). In Curs. M. Jesse uses a formal sing. in addressing the prophet Samuel (7385-6), Jesus is also addressed formally by Martha (14098-14103), partly so by the Jews (14622-27) and once by his disciples (15181-184). Nicodemus is addressed by the Jews with both forms (14860-65).

3. *Children to parents or elders.*

In Gen. & Ex. Jacob's sons use the formal sing. once in speaking to him (2238-40 Jacob eft bit hem faren agon, Oc he ne duren ðe weie cumen in, "but *ge* wið us senden beniamin"). In Nor. Leg. II when the child Nicholas answers the bishop he says (1, 60-61), "Mi name es Nicholas . . . *ȝowre* seruand). St. Lucy at first uses the formal sing. in speaking to her mother (3, 19 ff.) but later, as she advises her mother regarding the recovery of her health, she adopts the sing. form of the pronoun. Even Constantine uses the formal sing. in addressing his mother, Queen Elyne (14, 124-148). Havelok as a child, begging Godard to spare his life, uses both formal and common sing. pronouns in a single speech (482-495[100]). In Curs. M. several passages show the use of the formal sing. on the part of children toward their parents. The sons address Jacob in part formally (5175-5186), Joseph likewise addresses Jacob (5266-72), the daughter speaks with a formal sing. to Herodias (13154-5), daughters address their father formally (5697-5702), indeed even Christ in speaking to Mary uses in part the formal sing. (20601-4).

---

[98] Even here it is possible to assume that the plur. form is used to include with Joseph the Egyptian king whose official he is; but from the general context it seems probable that only Joseph is meant.

[99] Architriclin is here a proper name as quite often is the case in mediaeval literature. Cf. O. F. Barbazan et Meon II, 419, Kent. Serm. 29, 25; Nor. Leg. II, 17; 15-16; So. Leg. 9; 1715 . 1752, etc.

4. Wife to husband.

In Nor. Leg. I the wife of Alexius addresses him with the formal sing. in the one passage where she addresses him (2, 109 ff.). In Nor. Leg. II the wife addresses her husband, the prince, formally, at first (17, 235-252) but after they become Christians she uses the common sing. (17, 330 ff.). So also Cecelia addresses her newly-wedded husband formally at first (33, 59-74), but later shifts to the use of the common sing.

5. Suitor to lady, etc.

In the *Luue Ron* of R. Poems of J the poet himself uses a formal sing. once in addressing the maid for whom the poem is supposed to be written (10, 113 and 118. Hwat spekestu of eny bolde . . . more þan ich *eu* telle can[101]). In Nor. Leg. II when the devil, disguised as a fair lady, endeavors to tempt the good bishop he, or rather she, uses the formal sing. quite freely (1, 329 ff.), lapsing into the common sing. only as they become more intimate (1, 391). The bishop, on the other hand, uses the common sing. at first (1, 384) and adopts the formal sing. only as he becomes more deeply infatuated (1, 432). In Harl. 2253 it is the maid who uses the formal sing. in addressing her suitor (W 6, 13-20).

6. Persons of nearly equal rank.

In the fragment of Havelok's speech to Ubbe both plur. and sing. forms occur (1625-1631). In Curs. M. Joseph's brothers address him with the formal sing. perhaps because they are awed by his exalted station at the same time that they are feeling conscious of guilty acts toward him in the past (5103-5116). In R. Glouc. King Howell addresses King Arthur with both formal and common sing. pronouns (4061-2 Betere ansuere we ne ssolde vinde . þen *ȝe* abbeþ nou ysed . þeruore we aȝte onoury wel . of so noble wit *þi* red). Corineus says to Locrine (578-80), "*Hastow* vor-ȝute þe grete wo . & moni harde wounde þat ich abbe iþoled for þi fader . & þe mani harde stounde . Vor to winne him lond & *ȝow.*"

---

[100] Holthausen substitutes *you* for *þe* in l. 1626 (*Furnwall Miscellany*, p. 179).

[101] Since the poet really does shift to a plural once earlier in the poem (v. 39) one might assume the same kind of change even here, but the context argues against it.

7. To God.

Havelok, praying to God, uses a formal sing. once (1361); the rest of the prayer uses only the common sing. pronoun (v. 1384, etc.). Also in Curs. M. Samuel, praying to God, uses a formal sing. (7362 þat childs nam *yee* will me scau).

8. Apostrophe.

In Harl. 2253 the poet uses one formal sing. pronoun intermingled with common singulars in addressing France (P 5, 121-2 Alas, *þou* seli fraunce! for *þe* may þunche shome þat ane fewe ffullaris makeþ *ou* so tome). In much the same way he addresses Jerusalem also (P 8, 65-70 Jerusalem, *þou* hast ilore þe flour of al chiualerie . . . he wolde ha rered vp ful heyȝe *oure* baners). Cf. O. F. version of the last passage, "*tu* as perdu La flour de *ta* chivalerie . . . jeo ne sai mie *Toun* baner qi le meintindra[102]).

9. To the reader.

Once in Kil. Poems the poet addresses the reader with a plur. form of the pronoun which in its context must be taken as a formal sing. (5, 189-192 Ich red, vp no man *þou* hab triste No vppon non oþer, Ok del hit wiþ *ȝure* owen fist, Trist to soster no broþer).

IV. SUMMARY AND CONCLUSIONS.

The formal sing. is used, as a summary of the above examples shows, in only ten monuments and collections of the period, namely, Gen. & Ex., R. Poems of J, Nor. Leg. I and II, So. Leg., Havelok, Curs. M., R. Glouc., Kil. Poems and Harl. 2253. These represent all the chief dialects except the Kentish.

In very few instances, however, is formal address consistently maintained, but either the writer soon lapses into the use of the common sing. or else the formal sing. represents merely an isolated occurrence. The few examples of unmixed formal usage are in short passages where there is little opportunity to judge how strongly the writer felt the need of making his characters speak formally. It is hardly necessary to suggest that the examples classed under the last three rubrics above can not be deemed evidence of much value.

---

[102] Böddeker, Altenglische Dichtungen, p. 454.

On the whole, the use of the formal singular in English literature of the second half of the thirteenth century is sporadic and seems rather the occasional reflection of a practice familiar in some other tongue or at least in some other class of society than that represented by most of the English literature of the century. Probably both the foreign tongue and the other class of society are reflected altho there is little real evidence to prove either, and the question of the cause or causes of the introduction of the formal singular into English can be answered at best with conjectures only.

We know that a formal pronoun of address was very common in Old French literature as far back as the time of the writing of the version of the Roland now extant and if the O. F. romances of the twelfth and thirteenth centuries are at all faithful in their portrayal of social intercourse, the formal singular was quite generally used. We also know that the English monasteries were full of French monks for some time after the Conquest and there was a constant intercourse between English and continental religious institutions. The criteria of French scribal participation in the copying of English literature, as worked out by Prof. Skeat,[108] are to be found in various monuments of the period, and it is surely unnecessary to speak in detail of the numerous French pieces translated or paraphrased into Middle English. It cannot be questioned that the writers of much of our thirteenth century literature knew well the use of the formal pronoun in French.

It would be scarcely credible that the usage was transplanted from the one literature to the other by the writers and then adopted into everyday intercourse by people outside the seats of learning. Rather it would seem probable that it was first an imitation at court of Anglo-Norman and Anglo-French usage which gradually appeared in the more serious literature of the times. If there were in English the same amount of courtly literature that twelfth-century French can boast, it might be possible to push back the beginnings of the practice of formal address much farther than 1250 A. D. As it is, it is only possible to conjecture that the English court which was so strongly French in the days of Marie de France knew the new formal address and practiced it, but that being a courtly usage at first, it smacked too strongly of worldliness to be allowed to slip into the homiletic and religious-historical works of this early time.

---

[108] Skeat, The Lay of Havelok the Dane, Clarendon Press, 1902, pp. x-xiii.

The same argument which speaks for a French influence in introducing the formal singular into English usage opposes the idea that it could have come exclusively out of Latin usage. For Latin was not a popular tongue however widely it may have been used by scholars and it was not a living, growing language as the French was, hence could hardly have exerted the influence in this matter that the French could.

But as has already been said, it is only possible to conjecture as to the exact status of the practice in English about the year 1250 A. D. when it begins to show in English literature. No doubt a search of Latin literature of early England will throw more light on the question, but that is not in the purpose of the present study and so we can be content if the facts relating to the practice as it appears in English literature of the thirteenth century have been presented with reasonable accuracy and completeness.

378.73
L54J
P9

cat

JUL 18 19[illegible]

LELAND STANFORD JUNIOR UNIVERSITY PUBLICATIONS
UNIVERSITY SERIES
[No. 20]

The
Anoplura and Mallophaga
of
North American Mammals

BY

VERNON LYMAN KELLOGG
Professor of Entomology
AND
GORDON FLOYD FERRIS

STANFORD UNIVERSITY, CALIFORNIA
PUBLISHED BY THE UNIVERSITY
1915

UNIVERSITY SERIES

INHERITANCE IN SILKWORMS, I. Vernon Lyman Kellogg, Professor of Entomology. 89 pp., 4 plates. 1908. Price $1.00.

THE OPISTHOBRANCHIATE MOLLUSCA OF THE BRANNER-AGASSIZ EXPEDITION TO BRAZIL. Frank Mace McFarland, Professor of Histology. 105 pp., 19 plates. 1909. Price, $1.00.

A STUDY OF THE NORMAL CONSTITUENTS OF THE POTABLE WATER OF THE SAN FRANCISCO PENINSULA. John Pearce Mitchell, Assistant Professor of Chemistry. 70 pp., 1 map. 1910. Price, 50c.

SYNOPSIS OF THE TRUE CRABS (BRACHYURA) OF MONTEREY BAY, CALIFORNIA. Frank Walter Weymouth. 64 pp., 14 plates. 1910. Price, 50c.

THE OSTEOLOGY OF CERTAIN SCOMBROID FISHES. Edwin Chapin Starks, Assistant Professor of Zoology. 49 pp., 2 plates, 1 text figure. 1911. Price, 50c.

A PHYSICAL THEORY OF ELECTRIFICATION. Fernando Sanford, Professor of Physics. 69 pp., 2 plates. 1911. Price, 50c.

THE MATZKE MEMORIAL VOLUME. Papers by John Ernst Matzke, late Professor of Romanic Languages, and Thirteen Colleagues. 162 pp. 1911. Price, $1.00.

DAS HISTORISCHE PRÄSENS IN DER ÄLTEREN DEUTSCHEN SPRACHE. Bruno Boezinger, Assistant Professor of Germanic Languages. 91 pp. 1912. Price, 50c.

THE EFFECT OF A STRICTLY VEGETABLE DIET ON THE SPONTANEOUS ACTIVITY, THE RATE OF GROWTH, AND THE LONGEVITY OF THE ALBINO RAT. James Rollin Slonaker, Assistant Professor of Physiology. 36 pp., 1 plate, 15 text figures. 1912. Price, 50c.

CATALOGUE DE TOUS LES LIVRES DE FEU M. CHAPELAIN. (Bibliothèque Nationale, Fonds Français, Nouv. Acq., No. 318.) Colbert Searles, Associate Professor of Romanic Languages. 119 pp., 2 plates. 1912. Price, 75c.

THE DUDLEY MEMORIAL VOLUME. Papers by William Russel Dudley, late Professor of Botany, and Several Colleagues. 137 pp., 12 text figures, 9 plates. 1913. Price, $1.00.

THE FISHES OF THE STANFORD EXPEDITION TO BRAZIL. Edwin Chapin Starks, Assistant Professor of Zoology. 77 pp., 15 plates. 1913. Price, 75c.

(Continued on third page of cover.)

LELAND STANFORD JUNIOR UNIVERSITY PUBLICATIONS
UNVIERSITY SERIES

The
Anoplura and Mallophaga
of
North American Mammals

BY

VERNON LYMAN KELLOGG
Professor of Entomology
AND
GORDON FLOYD FERRIS

Issued May 25, 1915

STANFORD UNIVERSITY, CALIFORNIA
PUBLISHED BY THE UNIVERSITY
1915

Stanford University
Press

THE ANOPLURA AND MALLOPHAGA OF NORTH AMERICAN MAMMALS

CONTENTS

I. Introduction.

II. North American Anoplura.

III. Key to Families, Subfamilies and Genera of Anoplura.

IV. Descriptions of New Species and Determinations of Old Species of Anoplura.

V. Degree of Host Parasitization.

VI. North American Mallophaga from Mammals.

VII. Descriptions of New Species and Determinations of Old Species of Mallophaga.

VIII. Mammalian Host List of North American Anoplura and Mallophaga.

Explanation of Plates, and Plates.

I

INTRODUCTION

In the summer of 1913 the junior author, under an arrangement made by the Department of Entomology of Stanford University with Dr. Joseph Grinnell, director of the Museum of Vertebrate Zoology of the University of California, accompanied a collecting expedition of the Museum in Northern California with the privilege of examining for ecto-parasites all specimens of birds and mammals taken by the expedition.

Most of the Anopluran material on which this paper is based was derived from this arrangement; but other material already in the hands of the senior author, obtained at various times from mammals taken in California and elsewhere, and certain specimens loaned by Professor Osborn of the Ohio State University and by Mr. Bruce Cummings of the British Museum (Natural History), are included in this paper.

The total Anopluran material on hand includes twenty-two species and two varieties, of which eight species and both varieties are new, and are described herewith. One of these varieties has up to now been considered and listed as a species originally described from European hosts. Only twenty-four species of Anoplura have been hitherto recorded from North American mammals, of which nine are peculiar to North American hosts (as so far known), and fifteen are species originally described from European hosts, or hosts common to both Europe and America. Our list of twenty-two includes fourteen of the twenty-four kinds heretofore listed from North America. The total number of Anopluran species now recorded (including the records in this paper) from North American mammals, is thirty-four species and two varieties.

The total Mallophagan material on hand includes eighteen species, of which one species is new. Twenty-seven species have so far been recorded from North America, of which nine occur on domesticated hosts.

The determination of the hosts of the Californian specimens of Anoplura taken by the junior author in 1913 were made by the wholly competent authorities of the Museum of Vertebrate Zoology of the University of California, and may be implicitly relied on. Great care was taken by the naturalists of the collecting expedition and by the junior author to prevent straggling of the parasites of the collected specimens, and the attributions of parasites to particular host can be confidently accepted.

We desire to express our obligations to Professor Herbert Osborn and to Mr. Bruce Cummings for permission to examine important material kindly sent to California at our request.

The types of all new species described herewith are in the collection of the Entomological Laboratory of Stanford University, California.

II

NORTH AMERICAN ANOPLURA

The systematic knowledge of the North American Anoplura—indeed, of the Anoplura of the world—is still very slight. Although probably most of the species infesting the domestic animals, and certainly all of those infesting man, are known, but few species have as yet been collected from wild animals. At the time of writing this paper only about a hundred species of Anoplura have been described, of which three occur on man and a dozen on domestic animals. The remaining four score have been taken from animals both of wide geographic and wide taxonomic distribution. Monkeys, wild cattle, sheep, goats, deer, elephants, the giraffe, rabbits, rats, mice, squirrels, gophers, shrews, wolves, foxes, wild cats, seals and walruses, of the Old and New Worlds, are represented in the host list, which, however, altogether includes hardly a hundred mammal species. There is no doubt, of course, that many other mammals are hosts of Anoplura; only a beginning in the recording of both parasite and host species has been made.

But this beginning, and the accompanying study of the general biology of the Anoplura and their particular relations to their hosts, both as regards the distribution, the adaptive structural modification, and the physiological fitting of the parasite species and the injury to the host species, have revealed such important problems that the collection and study of the Anoplura is certain to be pursued with an ever increasing interest and ardor.

The special problem of the host and geographic distribution of the Anoplura and Mallophaga of mammals has already been rather fully taken up by the senior author in a paper, "Ectoparasites of Mammals," published in the American Naturalist, vol. 48, pp. 257-279, May 1914, and a special brief discussion of certain significant aspects of the close physiological fitting of the parasites to the specific blood character of the hosts has been given by the senior author in a paper entitled "Ectoparasites of the Monkeys, Apes and Man," published in Science, N. S. vol. 38, pp. 601-602, October 1913.

The comparatively recent determination by the precipitins reactions and by a study of the crystallizable proteins (haemoglobin) of the specificity of the blood of different mammal kinds, and the physiological (chemico-physical) similarities of the blood of nearly related mammals as contrasted with the dissimilarities of the blood of widely related kinds, finds an interesting confirmation in the very precise host relations of the blood-sucking parasites of the mammals.

As a corollary of this precision of host-relation, there arises the possibility of the determination of the phyletic relationships of hosts on a basis of the identity or close relationship, or the non-identity or wide relationship, of their Anopluran parasites. For the proper following up of this interesting matter, however, a much wider knowledge of the Anopluran fauna is needed.

The importance from the economic and medical point of view of a knowledge of the blood-sucking parasites of mammals is, of course, apparent when we consider the new knowledge of the dissemination (and in some cases, incubation) of various germ-caused diseases. The Anoplura have already been tried and convicted of participation in this crime of aiding and abetting the germs of animal and human disease in their struggle for distribution. And they have been proved to be very suspicious characters, at least, if not yet known to be actual criminals, in relation to their possibility of serving as true alternate hosts of certain dangerous Sporozoa. At least some of these parasitic and disease-producing Sporozoa can enter, remain in, and pass from the bodies of the sucking lice with unimpaired life and virulence.

The Anoplura, then, call insistently for study; and the first need in that study is the collection of material from many hosts and the careful systematic determination of this material. We need to know how many and various are the living species of the group, and the exact facts of their geographic and, especially, host distribution. The present paper is a small contribution along this line.

III

KEY TO THE FAMILIES, SUBFAMILIES AND GENERA OF THE ANOPLURA

1. Occurring exclusively on land mammals 4
Occurring exclusively on marine mammals (seals, sea-lions and walruses) . Family ECHINOPTHIRIIDAE . . 2
2. Antennae five-segmented, thorax and abdomen bearing scales . . . . Genus *Antarctophthirus*
Antennae four-segmented 3
3. Thorax and abdomen bearing scales. Genus *Lepidophthirus*
Thorax and abdomen without scales . Genus *Echinopthirus*
4. Head much elongated, cylindrical in shape; tibiae without a thumb-like process opposing the claw . . . . Family HAEMATOMYZIDAE
(Containing but one genus, *Haematomyzus*, occurring on elephants.)
Head not elongated; tibiae with a thumb-like process opposing the claw 5
5. Eyes extremely rudimentary or entirely lacking . . . . Family HAEMATOPINIDAE . . 9
Eyes present, well pigmented . Family PEDICULIDAE . . 6
6. Antennae five-segmented (on apes and man) . . . . Subfamily PEDICULINAE . . 8
Antennae three-segmented (on monkeys) . . . . Subfamily PEDICININAE . . 7
7. Legs all of same size . . . . . . Genus *Pedicinus*
Middle and posterior legs larger and stouter than anterior . . . . Genus *Phthirpedicinus*
8. Legs all of same size . . . . . . Genus *Pediculus*
Anterior legs smaller than the others . . Genus *Phthirus*
9. Antennae five-segmented 11
Antennae three-segmented Subfamily EUHAEMATOPININAE . . 10
10. Posterior legs with stalked, disk-shaped appendages on femur and tibia . . . . Genus *Euhaematopinus*
Posterior legs without appendages Genus *Haematopinoides*
11. Anterior legs smaller than posterior . . . . Subfamily LINOGNATHINAE . . 12

Legs all of same size . . Subfamily HAEMATOPININAE (One genus, *Haematopinus*)

12. Anterior pair of legs with two claws . . . Genus *Scipio*
Anterior legs with but one claw 13

13. Abdomen with well developed pleural plates 16
Abdomen entirely without pleural plates 14

14. Abdominal spiracles large, tubular, projecting from the body-wall . . . . Genus *Solenopotes*
Abdominal spiracles small, not projecting from the body-wall 15

15. Head usually slender, but little widened behind the antennae, gonapods of female long, frequently reaching beyond the extremity of the body; for the most part infesting Ungulates . . . . Genus *Linognathus*
Head broad, considerably widened behind the antennae, gonapods very short; infesting rabbits . . . . One species of the Genus *Haemodipsus*

16. Tergites and sternites of the abdomen for the most part with more than one transverse row of hairs 19
Tergites and sternites of the abdomen for the most part with but one row of spines 17

17. Middle and posterior pairs of legs of equal size, larger and stouter than the anterior pair 18
Anterior and middle pairs of legs of the same size, smaller than the posterior pair . Genus *Enderleinellus*

18. Abdomen with a pair of chitinized plates on the second sternite . . . . Genus *Fahrenholzia*
Abdomen without such plates . . . . Genus *Haemodipsus* (in part)

19. Abdominal tergites and sternites with not more than two rows of hairs 20
Abdominal tergites and sternites in part with three rows of hairs . . . . Genus *Hoplopleura*

20. First antennal joint with a stout spine at the distal postaxial angle or on the posterior margin . . . . Genus *Neohaematopinus*
First antennal joint not so 21

21. Abdominal tergites and sternites with distinct chitinized plates . . . . Genus *Polyplax*
Abdominal tergites and sternites without distinct chitinized plates . . . . . . Genus *Linognathoides*

IV

DESCRIPTIONS OF NEW SPECIES, AND DETERMINATIONS OF OLD SPECIES OF ANOPLURA

Family PEDICULIDAE

Pediculidae Leach, Zool. Misc., vol. 3, p. 64, (1817).
Pediculidae Enderlein, Zool. Anzeiger, vol. 28, p. 136, (1904).

Body depressed. Head not anteriorly produced into a cylindrical process. Antennae three- or five-segmented. Eyes large and clearly pigmented. Legs fitted for clasping.

This family includes the Anopluran parasites of man and the monkeys, and at present numbers about a dozen species, of which but three—and these the forms infesting man—have as yet been reported from North America. An examination of the monkeys in our zoological gardens would undoubtedly reveal some of the others.

The man-infesting species, *Pediculus capitis* (De Geer), *P. corporis* (De Geer), and *Phthirius pubis* (Linné), are too well known to require discussion here. For a special discussion of the host-distribution of the *Pediculidae* see Kellogg, "Ectoparasites of the Monkeys, Apes and Man," in Science, n. s. vol. 38, pp. 601-602, October 1903.

Family HAEMATOPINIDAE Enderlein.

Haematopinidae Enderlein, Zool. Anz., vol. 28, pp. 136, 137, (1904).

Body depressed. Head not anteriorly produced into a cylindrical process. Antennae three- or five-segmented. Eyes either entirely lacking or very rudimentary. Legs fitted for clasping, the tibiae having a thumblike process which opposes the claw.

This is by far the largest family of the sub-order, including more than three-fourths of all the species described.

Genus **HAEMATOPINUS** Leach.

Haematopinus Leach, Zool. Misc., vol. 3, pp. 64-65, pl. 146, (1817).
Haematopinus Enderlein, Zool. Anz., vol. 28, p. 138, (1904).

Head very broad posteriorly, the temporal angles very prominent, sharp and pointing forward. Antennae five-segmented. Thorax broad, with well defined sternal plate. Legs all nearly of the same size, and with a strongly chitinized skeletal piece between tibia and tarsus. Abdomen with a swollen, pad-like, strongly chitinized area on the lateral margin of the third to eighth segments. Tergites with many small, chitinized plates or with none at all. Each tergite and sternite with one transverse row of very small hairs.

The genus is for the most part parasitic upon Ungulates. There are but three species recorded from North America, all being from domestic animals.

Haematopinus asini (Linné).

Numerous specimens from a horse, (Stanford University, Calif.); also recorded by Osborn from horses.

Haematopinus suis (Linné).

Numerous specimens from a domestic hog, (Susanville, Lassen county, Calif.); also recorded by Osborn from domestic hogs.

Haematopinus eurysternus (Nitzsch).

Recorded by Osborn from domestic cattle.

Linognathus Enderlein.

Trichaulus Enderlein, Zool. Anz., vol. 28, pp. 139, 141, (1904).
Linognathus Enderlein, ibid., vol. 29, p. 194, (1905).
Linognathus Dalla Torre, Genera Insectorum, Anoplura, p. 12, (1908).

Head more or less slender, without projecting temporal angles; antennae five-segmented; thorax small and elongated; middle and posterior pairs of legs nearly equal in size, larger and stouter than the anterior pair. Abdomen entirely without chitinized tergal, sternal and pleural plates; the body-wall presenting a reticulated appearance. Each abdominal segment with two or three transverse rows of rather long hairs.

The species composing this genus are confined almost exclusively to the Ungulata, one species, however, being recorded from the domestic dog. But four species have been recorded from North America, and all of these are found upon domestic animals.

Linognathus vituli (Linné).

Numerous males and females from cows (Mountain View, Santa Clara county, Calif.). It has also been recorded by Osborn from cattle.

Linognathus stenopsis (Burm.).

We have at hand several males and females, taken from a Mexican goat (San Diego, Calif.), which we are referring to this species. It has not previously been recorded from America.

Linognathus piliferus (Burm.).

We have a single specimen taken from a dog (Stanford University, Calif.). It has been recorded by Osborn from a dog, but is apparently of rather uncommon occurrence.

Linognathus pedalis (Osborn).

Haematopinus pedalis Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 170-172, fig. 99, (1896).
Trichaulus pedalis Enderlein, Zool. Anz., vol. 28, p. 142, (1904).
Linognathus pedalis Enderlein, Zool. Anz., vol. 29, p. 194, (1905).

Recorded by Osborn as having been taken from the legs of a domestic sheep at Ames, Iowa.

Genus **POLYPLAX** Enderlein.

Polyplax Enderlein, Zool. Anz., vol. 28, pp. 139, 142, 223, (1904).
Polyplax Dalla Torre, Genera Insectorum, Anoplura, p. 13, (1908).
Haematopinus (Polyplax) Neumann, Archiv. de Parasit., vol. 13, pp. 529-532, (1909).
Polyplax Mjöberg, Arkiv. för Zoologi, vol, 6, no. 13, p. 159, (1910).
Polyplax Fahrenholz, Reprint from the second, third, and fourth Jahresberichte des Niedersächsichen Zool. Vereins zu Hannover, pp. 29-30, (1912).

Antennae five-segmented, the third segment in the male usually with a pronounced pre-axial projection. Eyes lacking. Anterior pair of legs small, middle and posterior pairs larger, posterior pair usually largest. Abdomen with tergites and sternites well chitinized, and in certain segments transversely divided into two distinct plates; the number of segments thus divided is not constant throughout the genus, and is always less in the male than in the female. Each plate with a transverse row of hairs; pleural plates well developed, present on the first to eighth segments.

The genus is composed entirely of species which find their hosts among the *Muridae*. We are recording two species, one previously described and one new, both from Murids.

Polyplax spinulosa (Burm.).

Plate I, fig. 5; plate V, figs. 11*a* and 11*b*; plate VI, fig. 7; text fig. 1.

Pediculus spinulosus Burmeister, Gen. Rhynchota, no. 8, (1839).
Pediculus denticulatus Nitzsch and Giebel, Zeit. für Ges. Naturw., vol. 23, p. 24, (1864).
Haematopinus spinulosus Denny, Mon. Anopl. Brit., p. 26, pl. 24, fig. 5, (1842).
Haematopinus spinulosus Giebel, Ins. Epizoa, p. 38, pl. 1, fig. 7, (1874).
Polyplax spinulosa Enderlein, Zool. Anz., vol. 28, p. 142, (1904).
Polyplax spinulosa Dalle Torre, Genera Insect., Anoplura, p. 14, (1908).
Haematopinus (Polyplax) spinulosus Neumann, Arch. de Parasitologie, vol. 13, p. 526, (1909).
Polyplax spinulosa Mjöberg, Arkiv. för Zoologi, vol. 6, no. 13, p. 160, (1910).
Polyplax spinulosa Fahrenholz, Reprint from the second, third and fourth Jahresb. des Niedersäch. Zool. Vereins zu Hannover, pp. 30-37, (1912).

One mature female, two mature males, and two larvae of this cosmopolitan, rat-infesting species, from *Epimys norvegicus* (Inverness, Marin county, Calif.), and many males and females from *Microtus cali-*

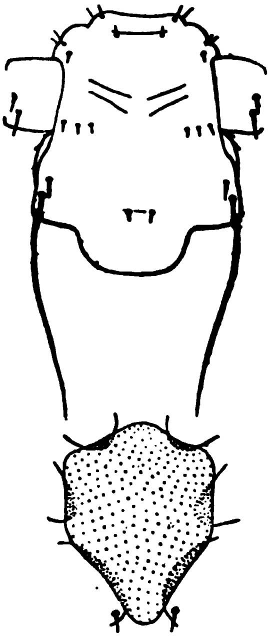


Fig. 1.—*Polyplax spinulosa* (Burm.); head of female and sternal plate of male from *Epimys norvegicus*.

fornicus (Inverness, Marin county, Freestone and Cazadero, Sonoma county, Gualala and Mendocino City, Mendocino county, Calif.), *Microtus* sp. (South Yolla Bolly Mt., Tehama county, Calif.), *Microtus mordax* (Tuolumne Meadows, Calif.), and *Phenacomys* sp., (Mendocino City, Calif.). We also have specimens from *Epimys rattus*, taken in India, and *Mus* sp. from Java. Osborn records it from the domestic rat at Ames, Iowa, and it has been recorded from various species of rats throughout Europe and Africa.

Comparison of the California specimens with those from India, together with reference to Fahrenholz's excellent paper upon this and other closely related species, enable us to be reasonably certain of our determinations. There are certain differences between the specimens from the various species of *Microtus* and *Phenacomys* and those from the rats, but these differences are on the whole so slight and so intangible, consisting merely of very small modifications of the shape and relative proportions of the head and sternal plate, that we do not feel justified in basing even a new variety upon them.

Polyplax auricularis n. sp.

Plate I, fig. 4; plate IV, fig. 8; text fig. 2.

One female, one male and two larvae from a single individual of *Peromyscus maniculatus rubidus*, (Inverness, Marin county, Calif.), and two females from *Peromyscus sitchensis prevostensis* (Forrester Island, Alaska, coll. Dr. Harold Heath), all referable to this curious species. It

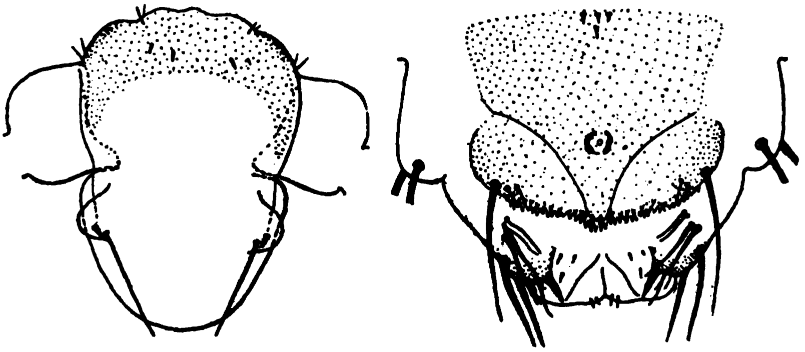


Fig. 2.—*Polyplax auricularis* n. sp.; head and ventral side of terminal segments of female.

is sharply distinguished from all the other species of *Polyplax* by the ear-like projections on the temporal margins of the head, by the large thorax and the enormously enlarged coxae of the posterior pair of legs. In the bi-partite character of the tergites and sternites of the abdomen and the presence of a projection on the third antennal joint of the male, it agrees very well with the other species of the genus.

DESCRIPTION OF THE FEMALE.—Length 1.2 mm., length of head .22 mm., width of head .14 mm., width of thorax .25 mm., width of abdomen .4 mm.

Head but little longer than wide, having its greatest width across the temporal angles altho the width across the anterior margin is nearly as great. Anterior margin nearly straight, with a very slightly projecting median portion. Lateral margins of the forehead straight and nearly parallel, the temporal angles very inconspicuous. Temporal margins converging slightly in a smooth curve, meeting the slightly convex occipital margin without a perceptible angle. Just behind the antennae and slightly in from the temporal margin there rises on each side a small, rounded, ear-like flap which extends slightly beyond the margin and at the base of which there are a very short, stout spine and a slender hair close together. Across the forehead a broad, chitinized area which extends back nearly to the base of the antennae. Anterior margin with a few short hairs and a transverse row of four very small hairs just in front of the antennae. Antennae set very close to the anterior margin of the head, the first segment very broad, occupying nearly a third of the length of the head, and slightly broader than long. Second segment much more slender, but nearly as long as the first and attached close to the posterior margin of the latter. Third, fourth and fifth segments sub-equal, much shorter than the second.

Thorax very large, much wider than the head and about as long, with lateral margins rounding. Anterior margin with a shallow V-shaped notch, posterior margin deeply concave. Mesothorax with a pair of hairs on the posterior margin, just inside the spiracles. Metathorax nearly divided into two parts by the concavity in the posterior margin. First pair of legs small with slender claw; second pair larger, with heavier claw, slender femur and with the coxae projecting slightly beyond the lateral margin of the thorax; third pair very large, with long slender femur, and with the coxae enormously enlarged and projecting far beyond the margin of the thorax. Sternal plate large, irregularly hexagonal, with the anterior margin slightly convex and longer than the posterior margin, which is slightly concave. Abdomen elongated oval, rather slender. First segment very narrow, with two short hairs. Second segment with two plates, each with four hairs. Third and eighth segments each with one plate and one row of six hairs. Fourth to seventh segments each with two plates and two rows of six hairs. Ninth segment with four hairs, the inner pair very short. Pleurites of the first segment apparently lacking, those of the second to seventh segments with a short tooth at each posterior angle and with two short spines on the posterior margin. Pleurites of the eighth segment not toothed and with the hairs longer than on the other segments.

On the ventral side the arrangement of the plates and hairs is practically as on the dorsum except that the first segment is apparently lacking and that the third segment has two plates. Genital plate pointed posteriorly and with a group of four short spines near the posterior margin. Gonapods with one long stout hair and two short ones. Behind the gonapods a group of four rather slender hairs, and at the posterior angles of the ninth segment a stout, inwardly projecting spine with three or four slender hairs and two stout hairs just outside it. Anterior lip of the vulva deeply fringed.

DESCRIPTION OF THE MALE.—Length .92 mm., length of head .2 mm., length of abdomen .62 mm., width of head .14 mm., width of thorax .24 mm., width of abdomen .35 mm. Head, thorax and legs as in the female. Third antennal segment with the distal pre-axial angle prolonged into a pronounced projection. First segment of the abdomen with two hairs, second with two rows of hairs, the first of four, the second of eight. Third to seventh segments each with one row of six to eight hairs. On the ventral side the first, second and third segments each with two plates and two rows of hairs, remaining segments with one plate and one row of hairs. Posterior end of the abdomen pointed. Having but a single male we have been unable to work out the genitalia.

Genus **HOPLOPLEURA** Enderlein.

Hoplopleura Enderlein, Zool. Anz., vol. 28, pp. 221-223, (1904).
Haematopinus (Polyplax) Neumann, Archiv. de Parasit., vol. 13, p. 531, (1909).
Hoplopleura Mjöberg, Arkiv. för Zool., vol. 6, no. 13, p. 164, (1910).
Hoplopleura Fahrenholz, Reprint from the second, third and fourth Jahresb. des Niedersäch. Zool. Vereins zu Hannover, vol. 29, pp. 44-46, (1912).

Antennae five-segmented, similar in male and female. First pair of legs small with slender claws, second pair larger with broader claws, third pair very large and stout with extremely broad, blunt claws and usually with a short, pointed process on the anterior margin of the tibia. Abdomen with well chitinized tergites and sternites, the fourth to seventh tergites and third to sixth sternites of the female being transversely divided into three distinct plates, the remaining tergites and sternites with either one or two plates, each plate with a transverse row of spines. The males in general have a smaller number of plates than the females, but the number is not constant thruout the genus. Anterior sclerite of the third sternite, in both male and female, with four or six very large and conspicuous spines. Pleural plates well developed, present on the first to eighth segments, large, usually overlapping and with the posterior margin variously toothed.

The genus is composed chiefly of Murid-infesting species, of the seven previously described species referable to it six being from Murids and one from a Sciurid. We are adding three new species from Sciurids, a new variety from Murids, and are recording one species, previously described, which also occurs upon Murids.

Hoplopleura acanthopus (Burm.) var. **americanus** n. var.

Plate IV, fig. 2; plate V, fig. 8; text fig. 3.

Haematopinus acanthopus Osborn, Bul. 7, o. c., U. S. Dept. Agr., Div. Ent., p. 23, (1891).

Numerous males and females from *Microtus constrictus* (Mendocino City, Mendocino county, Calif.); *Microtus californicus* (Covelo, Calif.); *Microtus* sp. (South Yolla Bolly Mt., Tehama county, Calif.), and three females and one male from "white lemming" (locality not known, possibly Pt. Barrow, Alaska). Osborn records it as *H. acanthopus,* from *Arvicola* sp. (Ames, Iowa), but an examination of his specimens has shown that they should be referred to this variety.

The variety is very close to the species, apparently differing from it only in the shape of the sternal plate, which has a more or less pronounced, rounded projection on the lateral margin which is absent in *H. acanthopus.* There is some variation but the character is usually plainly apparent, and it seems to be sufficiently constant to warrant the naming of a new variety.

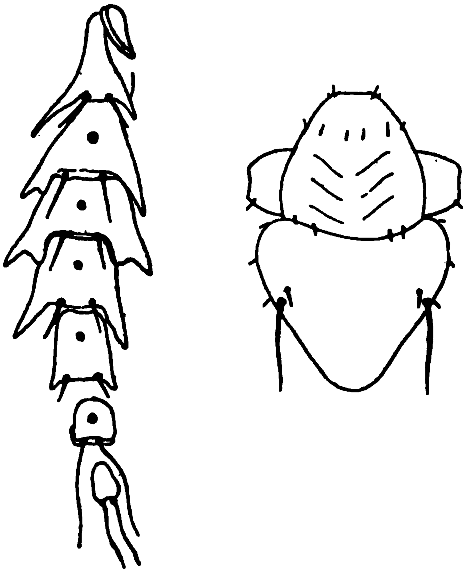


Fig. 3.—*Hoplopleura acanthopus* var. *americanus* n. var.; pleural plates and head of female.

Hoplopleura hesperomydis (Osborn).

Plate I, fig. 3; plate IV, fig. 1; plate V, fig. 14; text figs. 4 and 5.

Haematopinus hesperomydis Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., 26, fig. 14, (1891); Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 184-185, fig. 108, (1896).

Polyplax (?) hesperomydis Enderlein, Zool. Anz., vol. 28, p. 143, (1904).

Polyplax (?) hesperomydis Dalla Torre, Genera Insect., Anoplura, p. 13, (1908).

Numerous males and females from several individuals of *Peromyscus maniculatus rubidus* (Gualala, Mendocino county, Calif.); *Peromyscus maniculatus gambeli* (Covelo and South Yolla Bolly Mt., Tehama county, Calif.). Comparison of these specimens with Osborn's types shows them to belong unquestionably to this species. The specimens in the Osborn collection were taken from *Peromyscus leucopus* (Ames, Iowa).

H. hesperomydis seems to be closest to *H. acanthopus*, but differs from the latter in several well marked particulars. The sternal plate is smaller, more angular and more pointed posteriorly, the head is much more pointed posteriorly, and the pleural plates are quite different.

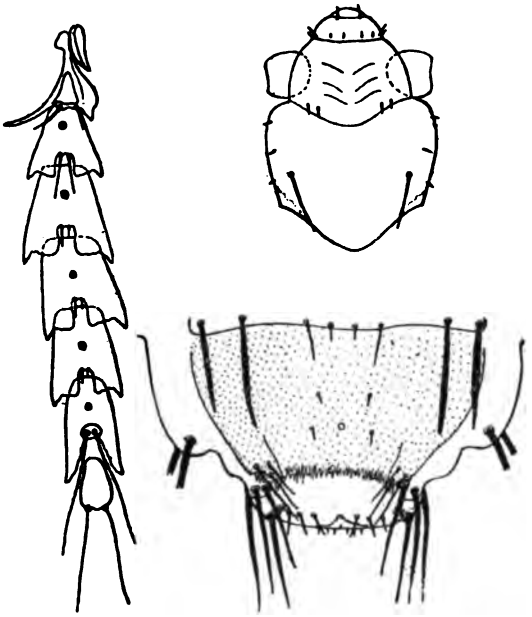


Fig. 4.—*Hoplopleura hesperomydis* (Osborn); pleural plates, head and ventral side of terminal abdominal segments of female.

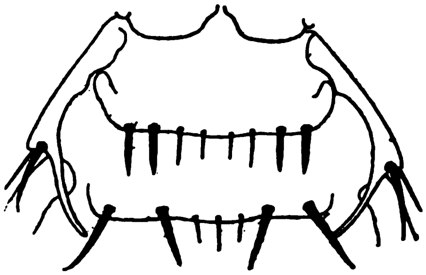


Fig. 5.—*Hoplopleura hesperomydis* (Osborn); ventral side of second and anterior portion of third abdominal segments.

Hoplopleura erratica (Osborn).

Haematopinus erraticus, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 186, (1896).
Polyplax (?) erratica Enderlein, Zool. Anz., vol. 28, p. 143, (1904).
Polyplax (?) erratica Dalla Torre, Genera Insect., Anoplura, p. 13, (1908).

We have not been able to see the type of this species, and the published description is a little too concise to permit of its certain identification. Professor Osborn, however, has sent us specimens of a species which he says is close to it, and, since these specimens which he has sent us are of a species of *Hoplopleura,* we are assuming that *Haematopinus erraticus* is a species of *Hoplopleura,* and are therefore assigning it provisionally to this genus. Osborn records the species from a gull (beyond a doubt a case of straggling) and also from *Arvicola* sp. (= *Microtus* sp.), *Tamias striatus,* and *Sciuropterus volucella.* We have at hand specimens from hosts very closely related to these, and find that our material includes three species of the genus *Hoplopleura.* It being impossible to decide which, if any, of these species is *H. erratica* we are describing all of them as new in the hope that the matter may be cleared up later.

Hoplopleura arboricola n. sp.

Plate IV, fig. 4; plate VI, fig. 8; text figs. 6 and 7.

Numerous males and females from *Eutamias hindsi* (Inverness, Marin county, Calif.); *Eutamias townsendi ocrogenys* (Freestone and Cazadero, Sonoma county, Calif.); *Eutamias* sp. (Covelo, Calif.); *Eutamias* sp. (South Yolla Bolly Mt., Tehama county, Calif.; Sanhedrin

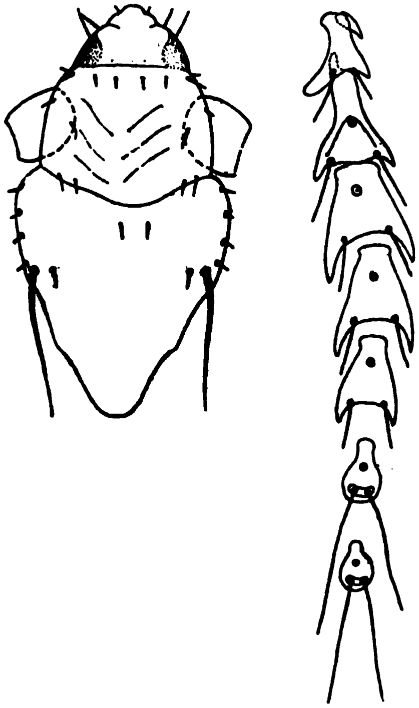


Fig. 6.—*Hoplopleura arboricola* n. sp.; head and pleural plates of female from *Eutamias townsendi ocrogenys.*

Mt., Calif.); *Sciurus griseus* (Inverness, Marin county; Freestone, Sonoma county, and Sanhedrin Mt., Calif.); *Sciurus douglasi mollipilosus* (Cazadero, Gualala, Mendocino county, South Yolla Bolly Mt., and Sanhedrin Mt.). Professor Osborn has sent us specimens from *Tamias striatus* (Ames, Iowa).

There is a considerable degree of variation among these specimens, yet they do not seem to represent more than one species. The species is apparently rather close to *H. maniculatus* (Neumann), the only species of *Hoplopleura* previously recorded from a Sciurid. It can be distinguished from the latter by the shape of the sternal plate.

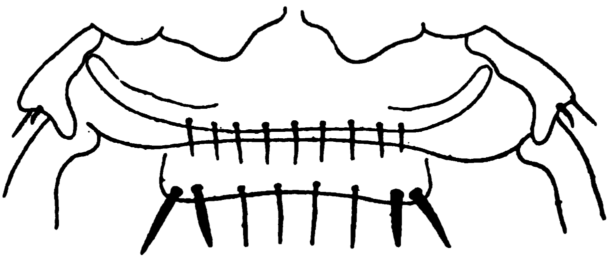


Fig. 7.—*Hoplopleura arboricola* n. sp; ventral side of second and anterior portion of third abdominal segments of female from *Eutamias townsendi ocrogenys*.

Description of the Female.—Length 1.00 mm., length of head .17 mm., length of abdomen .75 mm., width of head .12 mm., width of thorax .17 mm., width of abdomen .42 mm. Head narrow and rather pointed anteriorly, the temporal angles prominent, temporal margins nearly straight and slightly converging, forming a very slight angle with the occipital margin, which is produced into a rather sharp point. A small chitinized area bearing a single hair on each side, just in front of the antennae. Several small hairs on the anterior margin, a transverse row of six hairs in front, and a distinct suture just behind the antennae. Three or four small hairs along the temporal margin, and one long hair and a short spine at the posterior lateral angles. First antennal segment rather large; second slender; third, fourth and fifth shorter, the fourth with a slight post-axial projection.

Thorax relatively small, rather hexagonal in shape, wider than long, the V-shaped notch in the anterior margin very deep, the posterior margin of the prothorax with two long, widely-separated hairs. Sternal plate of the shape of an equilateral triangle with rounded angles and convex sides. Legs of the type common to the genus, the projection on the tibiae of the third pair being extremely small or wanting.

Abdomen large and stout. First segment very narrow, with two spines; second with one row of four; third with two plates, the first with four spines, the second with eight or nine; all spines on these three segments being very small and slender. Fourth to seventh segments with three sclerites and three rows of fourteen to sixteen rather small and slender but distinctly awl-shaped spines. Eighth with one row of twelve similar spines, ninth with four very slender hairs.

Pleurites of the first segment very small and tooth-like; of the second with a short dorsal tooth, and two short spines on the posterior margin and a rather short knife-like process on the ventral side. Pleurites of the third to the sixth segments with a single long tooth at each posterior angle, the posterior margin being slightly concave and bearing two hairs. Pleurites of the seventh and eighth segments very small, each with two long hairs.

On the ventral side the first segment apparently lacking; the second with one sclerite and one row of eight short spines; the third to seventh with three sclerites, each with eight to ten spines, except the first sclerite of the third segment, which has the two pairs of large spines characteristic of the genus. In each of these pairs the spines are very close together and diverge but slightly. Last sclerite of the seventh segment with very short spines.

Genital plate with a number of small hairs, gonapods with three small hairs, a group of three or four moderately large hairs behind each gonapod, one very large hair and several small ones at each posterior angle of the ninth segment. Anterior lip of the vulva fringed.

DESCRIPTION OF THE MALE.—Length .67 mm., length of head .16 mm., length of abdomen .47 mm., width of head .12 mm., width of thorax .17 mm., width of abdomen .32 mm. Head, thorax and legs resembling those of the female, the abdomen much smaller, slightly pointed posteriorly, and with fewer sclerites than in the females. Third tergite with two sclerites, remainder with one. Second sternite with one sclerite, third with three, fourth to sixth with two, seventh and eighth with one. The spines smaller and less numerous than in the female. Basal plate rather short and slender, parameres stout, more than half as long as the basal plate, penis with long slender point and diverging serrate arms.

Hoplopleura trispinosa n. sp.

Plate IV, fig. 3, text fig. 8.

Five specimens, all females, from *Sciuropterus volucella* (Kensington, Md.); *Sciuropterus* sp. (Eureka, Calif., and Brownsville, Oregon), taken from skins in the Stanford University collection.

This species is very close to *H. arboricola,* but is readily distinguished from the latter by the form of the sternal plate, which is more elongated, and by having six large spines on the first sclerite of the third sternite of the abdomen instead of four.

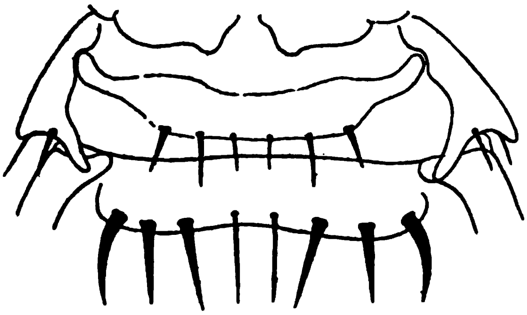


Fig. 8.—*Hoplopleura trispinosa* n. sp.; ventral side of second and anterior portion of third abdominal segments of female.

Description of the Female.—Length .72 mm., length of head .15 mm., length of abdomen .55 mm., width of head .1 mm., width of abdomen .4 mm., width of thorax .2 mm.

Head pointed anteriorly, temporal angles prominent, temporal margins nearly straight, forming a very slight angle with the occipital margin, which is produced into a point. A brown chitinized area on each side just in front of the antennae. Several small hairs on the anterior margin, three or four on the temporal margin, and one long hair and a short spine at the posterior lateral angle. A distinct transverse suture just behind the antennae. Antennae with the first segment large; second segment about as long as the first but much more slender; third, fourth and fifth segments shorter, subequal.

Thorax hexagonal in shape, wider than long, the posterior margin of the prothorax with a hair on each side just within the spiracle. Sternal plate triangular, lateral margins longer than the anterior margin. Legs of the type usual in the genus, except that the projection on the anterior margin of the tibiae of the third pair is extremely small.

Abdomen elongated oval. First segment with one sclerite bearing two widely separated pairs of slender hairs, each sclerite of the third segment with seven hairs of the same type. Fourth to seventh segments each with three sclerites and ten to fourteen small, awl-shaped spines. Eighth segment with one sclerite and six spines. Ninth segment with two very small hairs.

Pleurites of the first segment small and tooth-like, those of the second segment with a short knife-like process at the ventral posterior angle, and a short tooth at the dorsal posterior angle, and two hairs on the posterior margin. Pleurites of the third to sixth segments with a slender, rather long tooth at each posterior angle, and two hairs on the posterior margin. Pleurites of the seventh and eighth segments small, not toothed and with two long hairs.

On the ventral side the first segment apparently lacking, the second with one row of six small spines. Third to seventh segments with three sclerites each, all except the first sclerite of the third segment bearing six to eight awl-shaped spines. The first sclerite of the third segment bears eight spines, of which the median pair are very small, and the remainder large and conspicuous, the outer spine on each side being bent inward.

Genital plate bluntly pointed posteriorly, with four small hairs near the tip. Gonapods with two small hairs and one large hair. Caudad of each gonapod a group of three or four stout hairs, a stout spine and several small hairs at the posterior angles of the ninth segment.

LINOGNATHOIDES Cummings.

Linognathoides Cummings, Bul. Ent. Res., vol. 5, pt. 2, pp. 159-160, (1914).

Resembling *Polyplax* except for the absence of definite, well chitinized tergal and sternal plates. Antennae of the male without a preaxial process on the third segment.

This genus is very close to *Polyplax,* yet it seems to form a well differentiated group. It was but recently established by Cummings for a single species, *L. spermophili,* taken from a species of *Spermophilus* and also from a Murid in Asia. In the paper in which the genus is defined Cummings suggests that an American species, *Polyplax (?) montanus* (Osborn) should be referred to this genus, and this surmise we find to be correct. In addition to this species, we are recording two new species, one from a Murid and one from a Geomyid.

It was suggested by Cummings that the presence of a pair of finger-like flaps at the end of the abdomen of the male may perhaps be characteristic of the genus. We find, however, that in one species these flaps are not present, and furthermore that they are present in the genus *Neohaematopinus.* In fact we are of the opinion that in general but little reliance should be placed upon the males in determining generic relationships, altho there certainly are some exceptions to this.

Linognathoides montanus (Osborn).

Plate V, fig. 1; plate VI, fig. 4; text fig. 9.

Haematopinus montanus Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 184, fig. 107, (1896).
Haematopinus columbianus Osborn, Can. Ent., vol. 32, p. 215, (1900).
Polyplax (?) montana Enderlein, Zool. Anz., vol. 28, p. 143, (1904).
Polyplax (?) columbiana, ibid.
Polyplax (?) montana Dalla Torre, Genera Insect., Anoplura, p. 13, (1908).
Polyplax (?) columbiana, ibid.
Linognathoides (?) columbianus Cummings, Bul. Ent. Res., vol. 5, pt. 2, p. 160, (1914).

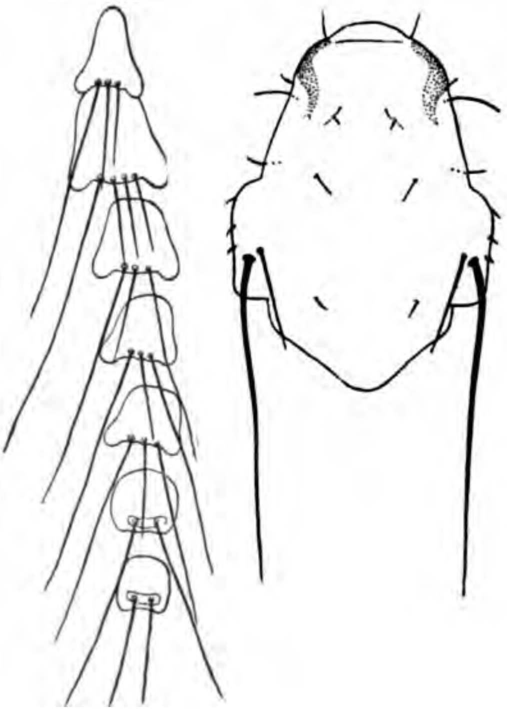


Fig. 9.—*Linognathoides montanus* (Osborn); pleural plates and head of female from *Citellus beacheyi douglasi.*

Numerous males, females and larvae from *Citellus beecheyi douglasi* (Cazadero and Palo Alto, Calif.), *Citellus beldingi* (Tuolumne Meadows, Calif.), *Citellus mexicanus* (Guanajuato, Mexico), *Citellus barrowensis* (Pt. Barrow, Alaska), "rock squirrel" (Boulder Canyon, Colo.), *Arctomys flaviventer* (Burns, Oregon), and *Citellus columbianus* (Pullman, Wash.); the last two records being of specimens taken from skins in the Stanford University collection. Osborn records the species from *Citellus columbianus* (Pullman, Wash.), and western gray squirrel (Fort Collins, Colo.).

An examination of Osborn's types of *Haematopinus montanus* and *H. columbianus,* together with the study of much other material which we have at hand, has convinced us that these two species really constitute but one species, which should be referred to the recently established genus *Linognathoides.* The name *montanus* having been first used, the species becomes *Linognathoides montanus* (Osborn).

There is a considerable degree of individual variation among our specimens, particularly as regards size and coloration, some specimens being much larger and more darkly colored than others; and there is also some variation in the shape of the sternal plate. However, to attempt to distinguish between these forms would require the naming of a variety for every host species.

Linognathoides inornatus n. sp.

Plate II, fig. 1; plate IV, fig. 7; plate V, fig. -5; plate VI, fig. 3; text fig. 10.

Two females and three males from three specimens of *Neotoma (Teonoma) cinerea occidentalis,* bushy-tailed wood-rat (South Yolla Bolly Mt., Tehama county, Calif.). This species differs from *L. columbianus* chiefly in the shape of the sternal plate and in the presence of a pair of finger-like processes at the end of the abdomen of the male.

Description of the Female.—Total length 1.3 mm., length of head .28 mm., length of abdomen .95 mm., width of head .18 mm., width of thorax .26 mm., width of abdomen .4 mm.

Head with the anterior margin slightly convex, the lateral margins of the forehead nearly parallel, diverging sharply immediately behind the antennae. Temporal margins nearly straight, converging slightly, the posterior lateral angles sharp. Occiput narrow, with the posterior margin prolonged into a point. A few small spines on the anterior margin, and a narrow transverse chitinized band just within it. Temporal margin with three or four small spines; a long hair and a long stout spine at the posterior lateral angle.

Antennae close to the anterior margin of the head, the first segment large, the second more slender and about as long, the third, fourth and fifth shorter, subequal.

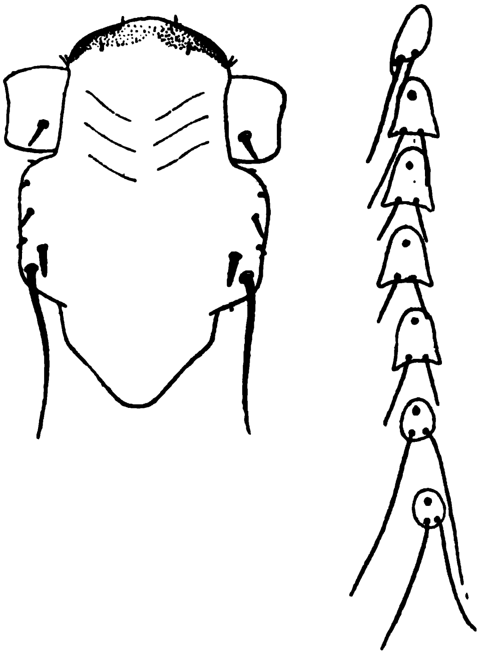


Fig. 10.—*Linognathoides inornatus* n. sp.; head and pleural plates of female.

Thorax wider than the head, widest across the middle, the lateral margins at first diverging sharply, then nearly parallel. Anterior margin with a deep V-shaped notch, the posterior margin nearly straight. Sternal plate kite-shaped, the posterior margin slightly concave. First pair of legs small, with slender, slightly bifid claw; the second and third pairs larger, and nearly equal to each other in size, the claw not extremely heavy.

Abdomen without tergal and sternal plates, the body-wall presenting a reticulated appearance. First segment narrow, with one transverse row of six hairs, the outer hair on each side being very short. Second segment with two rows of hairs, the first of five, the second of eight. Third to seventh segments with two rows of eight hairs. Eighth segment with one row of four hairs. Third to seventh segments with two hairs near the lateral margin. All the hairs slender and bluntly pointed.

Pleurites of the first segment apparently lacking, of the second with a slight ventral tooth and two long hairs on the posterior margin. Pleurites of the third to sixth segments with a slight tooth at each posterior angle, and with two slender hairs on the posterior margin, the ventral hair being longer. Seventh and eighth pairs of pleurites small, without teeth, and with two long hairs.

On the ventral side the second to seventh segments each with two rows of six to eight hairs, the third to seventh segments with two hairs near the lateral margin. Genital plate with several small hairs; gonapods with one short hair and two long hairs, behind each gonapod a group of four or five stout hairs, and a group of several stout hairs at each posterior angle of the ninth segment. Vulva fringed.

DESCRIPITION OF THE MALE.—Total length 1.1 mm., length of head .26 mm., length of abdomen .8 mm., width of head .16 mm., width of thorax .24 mm., width of abdomen .4 mm.

Head and thorax as in the female, except that the third antennal joint bears a pair of short, stout spines, which are not present in the female.

Abdomen with fewer rows of hairs on the dorsum, the second tergite only having two rows. Second to sixth sternite with two rows of hairs, the number and arrangement thruout being practically as in the female. Seventh sternite with but four hairs, of which the median pair are much the longest. Eighth sternite with two long spines. The ninth segment ending in a pair of finger-like processes. Basal plate rather long and slender, about twice as long as the parameres, which are rather stout. Penis long and slender, the arms diverging but little.

HAEMODIPSUS Enderlein.

Haemodipsus Enderlein, Zool. Anz., vol. 28, pp. 139-143, (1904).
Haematopinus (Polyplax) Neumann, Arch. de Parasit., vol. 13, p. 530, (1909).
Haemodipsus Dalla Torre, Genera Insect., Anoplura, p. 15, (1909).
Haemodipsus Mjöberg, Arkiv. för Zoologi, vol. 6, no. 13, p. 165, (1910).

Enderlein's definition of this genus is essentially as follows: Head short, swollen posteriorly, antennae standing far forward. Hind head without lateral projections. Abdomen without sclerites and plates, the outer wall quite smooth. Telson normal. Each of the seven sternites and eight tergites with a transverse row of rather closely spaced, very long hairs near the posterior margin. Forcipes of the penis on each side with a large, heavily chitinized tooth. Spiracles very small. Anterior legs more slender and smaller than the others. Tibiae and tarsi as in *Linognathus.*

The genus was established for two species, *H. lyriocephalus* (Denny) and *H. ventricosus* (Denny), both occurring upon European species of hares and rabbits. Enderlein did not have specimens of *H. ventricosus,* and it has since been pointed out that in this species the pleural plates are really present, altho they are extremely small. Because of this it has been suggested that these two species should not be referred to the same genus. Mr. Cummings, of the British Museum, has very kindly sent us specimens of both species for examination, and we are of the opinion that they should be referred to the same genus, even though the pleural plates are really present in one and absent in the other. These plates are so extremely small in *H. ventricosus* that the step from "pleurites present" to "pleurites lacking" is after all not very great, especially as the two species agree very closely in other particulars. *H. lyriocephalus* may be distinguished from any of the species of *Linognathus,* in which genus the pleural plates are also lacking, by the extremely broad head and by the very short gonapods of the female.

There have previously been referred to this genus only the two species mentioned above. We are provisionally referring to it a third species, which we are describing as new, taken from a vizcacha *(Lagidium peruani)* in South America. This last species is certainly very different in many respects from the other two in the genus, yet there seems to be no good reason for establishing a new genus for it, and it cannot well be referred to any other genus as yet established.

Haemodipsus ventricosus (Denny).

Plate II, fig. 2; plate IV, fig. 5; plate V, fig. 12; text fig. 11.

Haematopinus ventricosus Denny, Mon. Anopl. Brit., p. 30, pl. 25, fig. 6, (1842).
Haemodipsus ventricosus Enderlein, Zool. Anz., vol. 28, p. 143, (1904).
Haematopinus ventricosus Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 182, (1896).
Haemodipsus ventricosus Dalla Torre, Genera Insect., Anoplura, p. 15, (1908).
Haematopinus (Polyplax) ventricosus Neumann, Arch. de Parasit., vol. 13, pp. 527-528, (1909).
Haemodipsus ventricosus Mjöberg, Arkiv. för Zoologi, vol. 6, no. 13, p. 165 (1910).

Four females from a hare, *Lepus californicus* (Freestone, Sonoma county, Calif.), and one very badly damaged female from a domestic rabbit (Panama Canal Żone). Osborn records it from a prairie hare, *Lepus campestris* (Ames, Iowa), and from an unnamed host (Baltimore, Md.). Through the kindness of Mr. Cummings we have been enabled to compare our specimens with a co-type of *H. ventricosus,* and are certain of our identification. The published descriptions of the species are rather unsatisfactory, and we are therefore re-describing it somewhat more fully.

Description of the Female.—Total length 1.5 mm., length of head .35 mm., length of abdomen 1.05 mm., width of thorax .28 mm., width of head .3 mm., width of abdomen .72 mm.

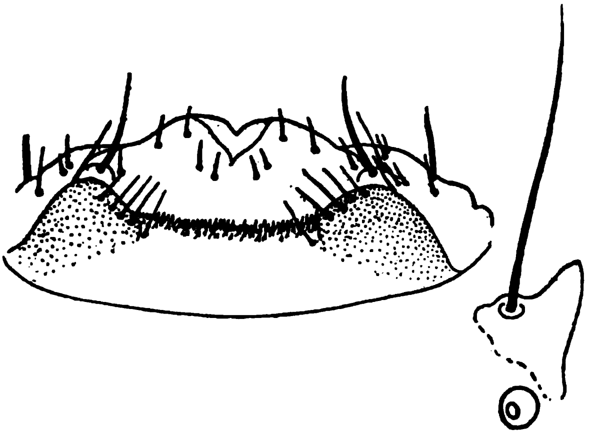


Fig. 11.—*Haemodipsus ventricosus* (Denny); pleural plate and ventral side of terminal abdominal segments of female.

Head with very convex anterior margin, widening slightly behind the antennae, the temporal margins convex and with an abrupt angle posteriorly; occiput rather narrow and quite convex. Anterior margin and forehead with several small hairs; a very faint transverse suture immediately behind the antennae with four small hairs arranged along it, four or five short spines along the temporal margin, and a single long hair at the posterior-lateral angle. Antennae set slightly in advance of the center of the head; first segment not conspicuously enlarged, about as wide as long; second segment of about the same length but more slender; third, fourth and fifth segments sub-equal.

Thorax relatively small, much narrower than the head and about twice as wide as long, widest posteriorly, apparently composed entirely of the prothorax. Anterior margin with a very deep and narrow V-shaped notch which reaches nearly to the posterior margin. A single short spine at each anterior angle, and a short spine and a long hair at each posterior angle. First pair of legs small with slender claw, second and third pairs much larger than the first, nearly equal to each other, with broad claw. Sternal plate hexagonal, the anterior margin slightly the longest, the others nearly equal. All the pairs of coxae widely separated.

Abdomen large, elongated oval, without chitinized tergites and sternites, having everywhere a reticulated appearance, the divisions between the segments poorly defined. First segment very small and narrow, with one row of four hairs; second segment with two rows of hairs, the first of six, the second of eight; third to seventh segments each with one row of eight hairs; eighth with six, of which the median pair is longer than the others; ninth with none. Second to seventh segments each with a pair of hairs on each side close to the lateral margin.

Pleurites present on the third to sixth segments, very small, toothlike, with the base attached to the body and the point free. Each with a single long hair on the posterior margin.

On the ventral side, segment one apparently with no hairs; segments two to five each with one row of six; six and seven each with one row of four. All except the first and ninth with two hairs near each lateral margin. Genital plate very poorly defined; gonapods small and bearing four or five small spines in a row on the posterior margin; just caudad of each gonapod a group of one large and several small hairs. Vulva fringed.

Haemodipsus parvus n. sp.

Plate II, fig. 4; plate IV, fig. 6; text fig. 12.

Five females from a vizcacha, *Lagidium peruani,* taken in Peru

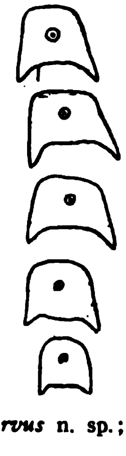


Fig. 12.—*Haemodipsus parvus* n. sp.; pleural plates of female.

(C. H. T. Townsend). While the species is, in general appearance, very unlike the others in the genus to which we are referring it, there seem to be no good grounds for considering it as representing a new genus, and it certainly cannot be referred to any other than *Haemodipsus* among genera so far established. It differs from the other members of this genus in its small head, the shape and size of the pleurites, and the exceedingly small number of hairs on the abdomen.

DESCRIPTION OF THE FEMALE.—Total length .7 mm., length of head .12 mm., length of abdomen .55 mm., width of head .1 mm., width of thorax .16 mm., width of abdomen .35 mm.

Head small and quite deeply inserted into the thorax, anterior margin somewhat convex, lateral margins nearly straight, the posterior margin slightly convex. Antennae set slightly in advance of the center of the head; the first segment not conspicuously enlarged; the second slightly more slender than the first and a trifle longer; the third, fourth and fifth subequal; the fourth with the outer posterior angle slightly produced. On each side immediately in front of the antennae there is a small brown patch. Several very small hairs on the anterior margin, a transverse row of four near the front of the head, another of four just in front of the antennae, and another of six somewhat farther back. A pair of spines about half way between antennae and the occipital margin and slightly in from the lateral margin, the inner being short, the outer longer, reaching slightly beyond the occiput.

Thorax considerably wider than the head, composed almost entirely of the pronotum, trapezoidal in shape, the lateral and posterior margins nearly straight, anterior margin with a shallow V-shaped groove which ends in a furrow that extends back to the posterior margin of the pronotum. A short spine in each anterior angle, the posterior margin of the pronotum bearing two short spines close together near the lateral margin, and a median pair of long hairs. First pair of legs small with slender claw; second and third pairs considerably larger, nearly equal in size, and with broad, stout claw. Sternal plate elliptical, the coxae widely separated.

Abdomen elongated oval in shape, about two-thirds as wide as long, with no chitinized tergal or sternal plates, the body-wall presenting a uniformly reticulated appearance, the divisions between the segments poorly defined. First to eighth segments with a median pair of hairs, close together; those of the eighth being very short, those of the others about as long as the segment. Second to seventh segments with one hair near the lateral margin. Eighth with two long hairs at the posterior angle. Second to fifth segments with pleural plates which are nearly square and have the posterior angles produced into a short tooth. First with one very short hair, remainder without hairs.

On the ventral side, segment one with median group of two hairs; two to six with four; seven with two widely separated; all the segments except the first, eighth and ninth with a hair near the lateral margin. Genital plate with a transverse row of five or six small spines. Gonapods with two or three long hairs; ninth segment with two short, stout spines near the posterior margin.

FAHRENHOLZIA n. gen.

We are establishing this genus for a single species taken from a pocket rat, *Dipodomys californicus* (family Heteromyidae). The species is of interest not only as the type of a new genus, but as the first Anopluran to be recorded from any of this small and very peculiar family of rodents. The genus stands between *Haemodipsus* and *Enderleinellus*, having the middle and posterior pairs of legs of the same size, as in *Haemodipsus*, and having a projection on the anterior margin of the hind tarsi as in *Enderleinellus*. The second sternite bears a uair of chitinous plates of doubtful homology, which are perhaps the homologues of certain similar but much smaller plates on the third sternite in *Enderleinellus*. It is possible that these plates represent the pleurites of the first segment.

DIAGNOSIS OF THE GENUS.—Antennae five-jointed, similar in male and female. Eyes lacking. Anterior pair of legs small, with slender claws; middle and posterior pairs much larger, and with broad claws. Posterior tarsi with a short projection on the anterior margin. Abdomen without chitinized tergal and sternal plates. Pleural plates well defined, present on the second to fourth segments. Sternite of the second segment with a pair of chitinous plates, which may represent the pleurites of the first segment. Each segment with a single transverse row of spines. Named in honor of H. Fahrenholz, whose excellent papers upon the Anoplura have been of much assistance to us.

Fahrenholzia pinnata n. sp.

Plate III, fig. 2; plate V, figs. 5 and 6; plate VI, fig. 10; text fig. 13.

Numerous males and females from several individuals of *Dipodomys californicus* (pocket rat) all taken at Covelo, Calif.

Description of the Female.—Total length .92 mm., length of head .15 mm., length of abdomen .68 mm., width of head .13 mm., width of thorax .15 mm., width of abdomen .35 mm.

Head small, pointed anteriorly; temporal angles very small, the temporal margins slightly convex and nearly parallel, merging imperceptibly into the occipital margin, which is slightly pointed. All the hairs on the head are very small; the anterior margin with several transverse rows of four near the front of the head; another of four immediately in front of the antennae; one on each side close to the base of the antennae, and transverse row of six immediately behind the antennae; one on each temporal margin; and a diagonal row of three on each side, extending from slightly behind the antennae toward the occiput. A small brown patch on each side immediately in front of the antennae.

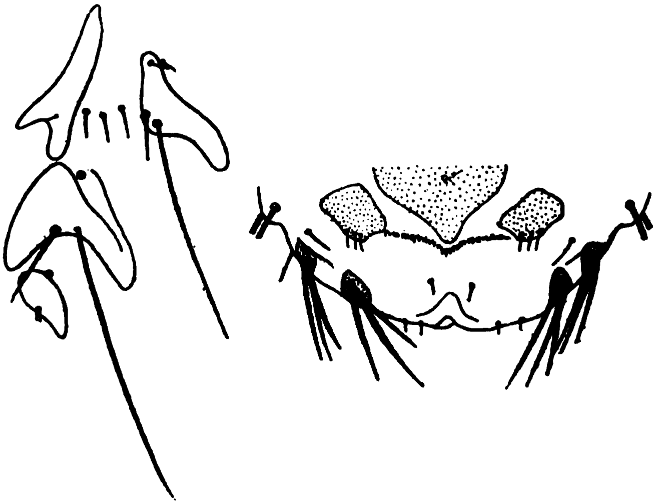


Fig. 13.—*Fahrenholzia pinnata* n. sp.; pleural plates and ventral side of terminal abdominal segments of female.

Antennae set slightly in advance of the center of the head, the first segment not conspicuously enlarged, and about as long as wide; the second segment nearly as wide as the first and slightly longer; the third, fourth and fifth segments subequal in length, and forming a very slight club. Ventral side of the head with a broad keel, which bears a short hair on each side, close to the base of the antennae. A few small hairs about the rostrum, which is close to the anterior margin.

Thorax small, entirely destitute of hairs, but little wider than the head, and only slightly wider than long; width across anterior and posterior margins nearly equal; the anterior margin with a very deep V-shaped notch which reaches nearly to the posterior margin; lateral margins slightly convex, the posterior margin nearly straight. The division between the meso-thorax and meta-thorax is very indistinct, and the spiracles on the meso-thorax are extremely small.

First pair of legs small, with slender claw; second and third pairs about equal in size, each with a broad, heavy claw. The tarsus of the third pair bears on its outer anterior angle a short, sharp, thumb-like projection. Sternal plate roughly circular, about as wide as long, the anterior margin almost straight, the posterior margin slightly pointed. First and second pairs of coxae widely separated, third pair approximate or contiguous.

Abdomen elongated, with nearly parallel sides, the posterior margin rounded. There are no chitinized tergites or sternites, the derm having everywhere a reticulated appearance; the divisions between the segments are poorly defined, and each bears a single row of spines. First segment very small, with two small, quite widely separated hairs. The second and third segments are so fused as to be indistinguishable from each other, a median pair of small spines alone marking the posterior margin of the second. The two segments together form a trapezoid, widest behind and with nearly straight lateral margins. Third segment with six or seven spines, fourth with twelve, fifth to seventh with twelve to sixteen; all awl-shaped and about as long as the segment, except that on the seventh segment the third spine from the median line on each side is much longer than the others, reaching beyond the end of the body. Eighth and ninth segments each with two spines, those on the ninth being widely separated and quite short. Eighth with two long hairs on posterior angles.

There are four pairs of pleurites belonging to the second to fifth segments. The pleurites of the second segment are long and slender, expanded, and with two short lobes at the posterior end, buried in the ventral wall of the fused second and third segments, and entirely invisible from above. The pleurites of the third segment consist of a knife-like piece, with a single point, closely applied to the dorsum of the second and third segments, directly dorsad of the pleurites of the second segment, and bearing on the posterior margin one short and one very long hair. On the lateral body-wall between the pleurites of the second and third segments there is a row of three small hairs. The pleurites of the fourth segment are triangular in shape, with the posterior margin deeply concave and bearing one long and one short hair. The ventral half is attached to the ventral body-wall; the dorsal half is free and projects from the body like a fin. Pleurites of the fifth segment small and toothlike, with but one point, which also projects from the body laterally and bears two very small hairs on the posterior margin. The spiracles are all extremely small.

On the ventral side segment two with a median pair of spines, segments three to seven with fourteen to sixteen spines. Genital plate small, sharply pointed posteriorly. Gonapods with three very small hairs. Caudad of each gonapod a group of two small and two large hairs, and at the posterior angles of the ninth segment a group of three stout hairs. Anterior lip of the vulva fringed.

Resembling the female except for the smaller size, more pointed ab- .15 mm., length of abdomen .55 mm., width of head .12 mm., width of thorax .15 mm., width of abdomen .35 mm.

Resembling the female except for the smaller size, more pointed abdomen, and the absence of the pair of long hairs on the posterior margin of the seventh segment. Basal plate entirely divided, the two parts slender and widely separated, parameres likewise slender, strongly outwardly convex, and with knobbed tips. Penis small, apparently divided into two pieces.

NEOHAEMATOPINUS Mjöberg.

Neohaematopinus Mjöberg, Arkiv. för Zoologi, vol. 6, no. 13, p. 160.
Acanthopinus, ibid., pp. 160-161.
Neohaematopinus Cummings, Bul. Ent. Res., vol. 3, p. 393, (1912).

Antennae five-segmented, set very close to the anterior margin of the head. Basal segment with the distal post-axial angle more or less produced, and bearing a stout spine; or with this angle not produced, but with a stout spine on the posterior margin of this segment. In the former case the antennae of both female and male are similar in shape, in the latter case the distal pre-axial angle of the third segment in the male is more or less produced. Head extremely broad, narrower than the thorax. Anterior pair of legs small, with slender claw; middle and posterior pairs subequal, larger than the first pair, and with stout claws.

Abdomen with or without distinctly chitinized tergal and sternal plates, usually with the second to seventh tergites and second to sixth sternites with two rows of spines, the remainder with one. Pleural plates present on the first to seventh segments. Posterior margin of the second tergite in the male slightly emarginate, and with a closely set group of spines of various lengths at each end of the emargination.

This genus was established by Mjöberg for a single species, *N. sci-*

uropteri (Osborn), and immediately following his diagnosis of it he proposed a second genus, *Acanthopinus*, which Cummings has quite recently shown should be united with *Neohaematopinus*. We have specimens of both genera and are entirely in accordance with the opinion of Cummings, for, altho there appears at first sight to be a division into two sharply marked groups, these groups are connected by intermediate forms.

The genus is extremely close to *Polyplax*, yet there are certain characters common to all its members which are found in none of the species of *Polyplax*. Of these differences the most notable is the character of the second tergite of the male, which in all the species of *Neohaematopinus* thus far described has the posterior margin distinctly emarginate and bearing a closely set group of spines of various lengths at the ends of this emargination—a character that is present in none of the males of *Polyplax*.

The genus is composed entirely of Sciurid-infesting species, at present five in number. We are recording two species previously described, and one which is new.

Neohaematopinus sciuropteri (Osborn).

Plate I, fig. 1; plate V, figs. 2 and 13.

Haematopinus sciuropteri Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., pp. 23-24, fig. 12, (1891); Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 182-183, fig. 105, (1896).

Neohaematopinus sciuropteri Mjöberg, Arkiv. för Zoologi, vol. 6, no. 17, p. 160, (1910).

One male, taken from a skin of *Sciuropterus* sp. (Eureka, Calif.) in the Stanford University collection. The species was originally described from the male alone, and no description of the female has ever been published.

Neohaematopinus antennatus (Osborn).

Plate V, fig. 10; plate VI, fig. 5; text fig. 14, *A* and *B*.

Haematopinus antennatus Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., p. 25, fig. 13, (1891); Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 183-184, fig. 106, (1896).

Polyplax (?) antennata Enderlein, Zool. Anz., vol. 28, p. 143, (1904).

Polyplax (?) antennata Dalla Torre, Genera Insect., Anoplura, p. 13, (1908).

Acanthopinus antennatus Mjöberg, Arkiv. för Zoologi, vol. 6, no. 13, p. 161, (1910).

Several males and females from *Sciurus griseus* (Inverness, Marin county; Freestone, Sonoma county; Sanhedrin Mt., Mendocino county, Calif.), and *Sciurus douglasi mollipilosus* (Cazadero and Freestone, Sonoma county; Gualala, Mendocino county, Calif.). One female from *Sciurus fossor nigripes* (Mt. Hamilton, Calif.).

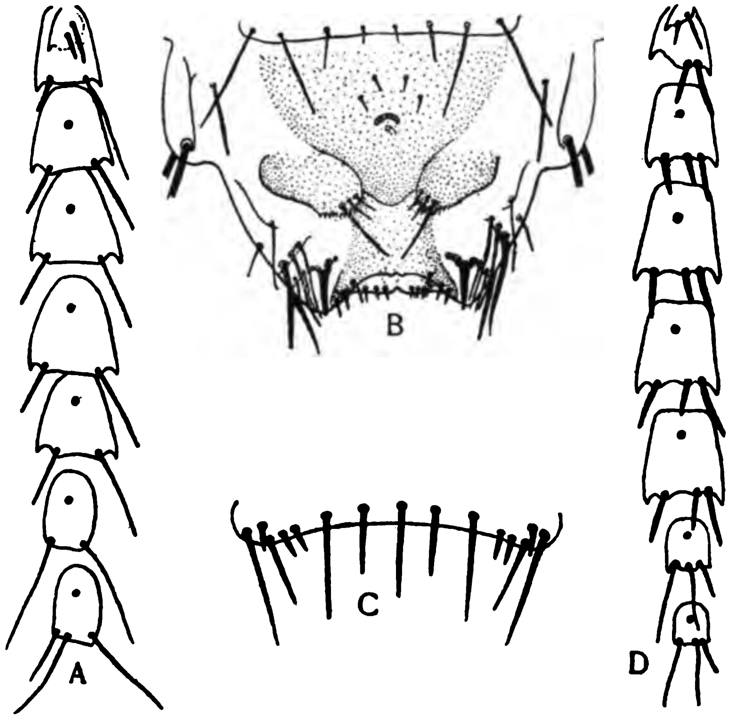


Fig. 14.—*Neohaematopinus antennatus* (Osborn); A, pleural plates, and B, ventral side of terminal abdominal segments of female from *Sciurus griseus*. *Neohaematopinus pacificus* n. sp.; C, posterior margin of third abdominal tergite male, and E, pleural plates of female..

We are referring these specimens to *N. antennatus,* altho we have not seen the type of this species and cannot be absolutely sure of our determination. Professor Osborn has sent us specimens of a species labelled "near *antennatus*" which differ from our specimens in having the distal, post-axial angle of the first antennal segment much less produced, but agree with our specimens in other particulars. Osborn records the species from *Sciurus cinereus* var. *ludovicianus* (Ames, Iowa). Our specimens are characterized by the almost entire absence of chitinized tergal and sternal plates, altho in some specimens these are present as narrow bands immediately in front of the transverse rows of hairs.

Neohaematopinus pacificus n. sp.

Plate I, fig. 2; plate V, figs. 3, 7a and 7b; text fig. 14 C and D.

Numerous males and females from *Eutamias townsendi ochrogenys* (Freestone, Sonoma county, Calif., and Gualala, Mendocino county, Calif.), *Eutamias hindsi* (Cazadero, Sonoma county, Calif.), *Eutamias* sp. (South Yolla Bolly Mt., Tehama county, Calif.), and *Eutamias* sp. (Sanhedrin Mt., Mendocino county, Calif.). Two females and one male from a skunk, *Mephitis occidentalis* (Covelo, Mendocino county, Calif.), this last record evidently being due to straggling from chipmunk prey of the skunk.

This species differs from *N. antennatus* (Osb.) in having the anterior division of each segment of the abdomen distinctly chitinized. It is evidently quite close to *N. sciurinus* (Mjöberg), a European species, but seems to differ from it in the shape of the head.

DESCRIPTION OF THE FEMALE.—Total length 1.00 mm., length of head .2 mm., length of abdomen .7 mm., width of head .17 mm., width of thorax .2 mm., width of abdomen .45 mm.

Head with the anterior margin very slightly convex and with a slight median point. Lateral margins of the forehead nearly straight and converging somewhat. Temporal angles very prominent, the temporal margins slightly emarginate, the posterior-lateral angles sharp and prominent. Occiput narrow and with posterior margin produced into a slight point. A small brown patch on the anterior margin on each side of the median line. Temporal margin with three or four short spines, a long pair and a short stout spine at the posterior-lateral angle. Antennae very close to the anterior margin. First segment large, the distal post-axial angle slightly produced and bearing a short, stout spine. Second segment more slender but almost as long, with nearly parallel sides. Third segment very short, widest distally, the anterior margin longer than the posterior. Fourth segment similar, but with the posterior margin longer than the anterior. Fifth joint small.

Thorax shorter and wider than the head, with convex lateral margins, widest slightly anterior to the posterior margin, which is nearly straight. A short spine on each shoulder and two widely separated pairs of spines on the posterior margin of the meso-thorax, the outer spine of each pair being short and sharp, the inner one long and hair-like. Sternal plate kite-shaped, with the posterior margin slightly concave.

First pair of legs rather small, with slender claw; second and third pairs large, subequal, with rather heavy claws.

Abdomen elongated oval. First segment narrow, with eight spines of varying lengths on the posterior margin. Second to seventh segments with two transverse rows of eight to twelve rather slender spines, and with two spines near each lateral margin. Eighth and ninth segments with one row of six spines. The first tergite, both divisions of the second, and the anterior division of the third to seventh tergites, show a well defined chitinized plate. The remaining divisions are not chitinized. First pair of pleurites extremely small, with two short spines, and closely oppressed to the second pair. Second to sixth pairs with a slight tooth at each posterior angle, second with two stout spines close together on the posterior margin, the third to sixth with three similar spines. Seventh and eighth pairs smaller, without teeth, and with three slender hair-like spines.

On the ventral side, the first segment lacking, the second to sixth segments with the same arrangement of plates and spines as is shown on the dorsum. Seventh segment with one sclerite and eight spines, the outer pair on each side very long, the remainder very small. Genital plate with four small spines arranged in a semicircle near the center; gonapods with three long and slender hairs, caudad of each gonapod a cluster of spine-like hairs, each tuft composed of two stout hairs and several small ones directly behind the gonapod. Three or four stout hairs and several small ones at each posterior angle of the ninth segment.

Description of the Male.—Total length .9 mm., length of head .2 mm., length of abdomen .6 mm., width of head .17 mm., width of thorax .2 mm., width of abdomen .4 mm.

Head, thorax and legs as in the female. Third joint of antennae with two short, stout spines near the tip, which are not present in the female.

Abdomen with a smaller number of rows of hairs than in the female, the second tergite and the second to sixth sternites only having two rows, the remainder one. Tergites with well defined chitinous plates, sternites with the anterior portion only chitinized. Second plate of the second tergite slightly emarginate, with a group of two long and two very short spines at the posterior angles, and with five spines between these groups. Eighth tergite without spines, seventh sternite with six, eighth sternite with two, remaining rows with practically the same number as in the female.

Abdomen pointed posteriorly, ending in a pair of finger-like processes. Basal plate long and slender. Parameres long and stout. Penis long and slender, with arms diverging but slightly.

Genus ENDERLEINELLUS Fahrenholz.

Enderleinellus Fahrenholz, Zool. Anzeiger, vol. 39, p. 56, (1912).
Enderleinellus Fahrenholz, Reprint from second, third and fourth Jahresbericht des Niedersächsischen Zool. Vereins zu Hannover (Zoologische Abteilung der Naturhistorischen Gesellschaft zu Hannover), pp. 52, 58, (1912).

Antennae five-segmented. Anterior and middle pairs of legs of the same size, small, with slender pointed claws, posterior pair much larger and heavier with very stout claws, the tarsi with or without a sharp process at the outer, anterior angle.

Abdomen without chitinized tergal and sternal plates or with these plates but weakly developed. Second tergite and third sternite with two transverse rows of hairs, remaining tergites and sternites with one row. Pleural plates present on second to fifth or sixth segments. Third sternite with a pair of widely separated chitinous plates of doubtful homology.

This genus was established for a single species, *E. sphaerocephalus* (Burm.), found upon squirrels in Europe. We are referring to it one species, *E. suturalis* (Osborn), which has previously been referred to *Polyplax*, a new variety of this species, and two new species, all being from Sciurids.

Enderleinellus suturalis (Osborn).

Plate IV, fig. 9.

Haematopinus suturalis Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., p. 27, fig. 15, (1891); Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 185, fig. 109, (1896).
Polyplax (?) suturalis Enderlein, Zool. Anz., vol. 28, p. 143, (1904).
Polyplax (?) suturalis Dalla Torre, Genera Insect., Anoplura, p. 14, (1908).

Through the kindness of Professor Osborn we have been enabled to examine specimens of this species taken from *Citellus franklini* (Ames, Iowa). Since we are describing a variety of this species and also a new species very closely related to it, we are redescribing it more fully here. We may remark that *Polyplax otomydis* Cummings, which was stated by its author to be very close to *E. suturalis*, is, as a matter of fact, very different, the only point in which the two species at all closely resemble each other being in the common possession of the transverse suture across the head.

DESCRIPTION OF THE FEMALE.—Total length .85 mm, length of head .25 mm., length of abdomen .45 mm., width of head .14 mm., width of thorax .20 mm., width of abdomen .45 mm.

Head much longer than wide, rather cylindrical in shape and with the antennae set well forward. The anterior margin is roundly pointed, there are no temporal angles and the temporal margins are for the greater part of their length parallel and nearly straight, finally converging in a smooth curve to form the slightly rounded occiput. Just behind the antennae is a conspicuous, transverse suture. The anterior margin bears several short hairs, there are two short hairs on each side in the anterior angle between the lateral margin and the suture, and a single short hair on each side just behind the suture. The rostrum is set close to the anterior margin and is surrounded by a chitinous ring.

Antennae set well back from the anterior margin of the head; first segment not conspicuously enlarged, second segment longer but nearly as wide at its outer end. The third, fourth and fifth segments are subequal in length, but the fourth segment is wider than the other two, giving the antennae a slightly clavate appearance.

Thorax very short, widest about the middle, the anterior margin with a V-shaped notch, the posterior angle nearly straight and wider than the anterior, the lateral margins convex. Mesothorax with a pair of large spiracles and a medium pair of rather long hairs on the posterior margin. First and second pairs of legs long and slender, with slender claws which are slightly bifid at their tips. Third pair very large, with broad, heavy claws and with a blunt, tooth-like projection on the anterior margin of the femora. Sternal plate slightly longer than wide, the lateral margin nearly straight diverging very slightly, the posterior margin nearly straight, the anterior margin quite convex. Coxae of first and second pairs of legs widely separated, of the third pair approximate or contiguous.

Abdomen almost circular in outline without chitinized dorsal and ventral plates. A single row of spines on each segment except the first, which has none. Second segment with a median pair of rather short hairs and a single hair near each lateral margin. Second to seventh segments each with eighteen to twenty-four long, slender, bluntly-pointed hairs, arranged in three groups, a median group of eleven to fourteen and two lateral groups of six to eight, the groups, however, not very distinctly separated. Eighth and ninth segments with a median pair of hairs; seventh and eighth segments each with two long hairs at the posterior angles. Only the second to fourth segments bear pleurites. All are triangular in shape with the posterior margin longest and somewhat concave, the posterior angles produced into broad, rounded points. The first bears no hairs, the second, which is the largest, bears a moderately long, stout, blunt hair and a very short one, and the third and fourth each bear two long hairs, in each case that on the dorsal side being the longer. The second segment bears on the ventral side, slightly in from the pleurite, a small chitinized piece, of doubtful homology, but perhaps representing the remnant of the first pleurite.

On the ventral side of the abdomen all the spines are appreciably shorter and stouter than on the dorsal side, and the number is somewhat smaller. The genital plate is very broad, slightly pointed posteriorly and very convex anteriorly, apparently including a portion of the seventh segment since the row of hairs on this segment extends partly across the genital plate. The gonapods each bear two very short hairs. Behind each gonapod a group of two long stout hairs and two more slender hairs. A short, sharp, stout spine inwardly pointing on the ninth segment. Vulva not fringed.

DESCRIPTION OF THE MALE.—Length .75 mm., length of head .22 mm., length of abdomen .45 mm., width of head .12 mm., width of thorax .2 mm., width of abdomen .4 mm.

In general closely resembling the female except for its slightly smaller size and more pointed abdomen. The number of spines on the abdomen is slightly less than in the female, there being four to six less hairs in each row.

Basal plate rather short, divided into two slender rods, which are united only at their anterior ends. Parameres shorter than the basal plate, slender, curved inward at the posterior end; penis very small and inconspicuous.

Enderleinellus suturalis var. **occidentalis** n. var.

Plate II, fig. 3; plate IV, fig. 10; plate V, fig. 17.

Several males and females from two individuals of *Callospermophilus chrysodeirus trinitatus* (South Yolla Bolly Mt., Tehama county, Calif.). The variety differs from *E. suturalis* in the conspicuously smaller number of spines on the abdomen and in the shape of the sternal plate. The number of spines on each abdominal segment is from fourteen to eighteen, as compared with eighteen to twenty-four in *E. suturalis,* and the division into three groups is much more marked. The sternal plate is shorter and more nearly round than in *E. suturalis.*

Enderleinellus osborni n. sp.

Plate IV, fig. 11; plate VI, fig. 6; text fig. 15.

Numerous males and females from several individuals of *Citellus beecheyi douglasi* (ground squirrel) (Cazadero and Covelo, Calif.). The species is close to *E. suturalis*, differing chiefly in the shape of the sternal plate and the size and number of the abdominal spines, which are much fewer and much shorter and stouter.

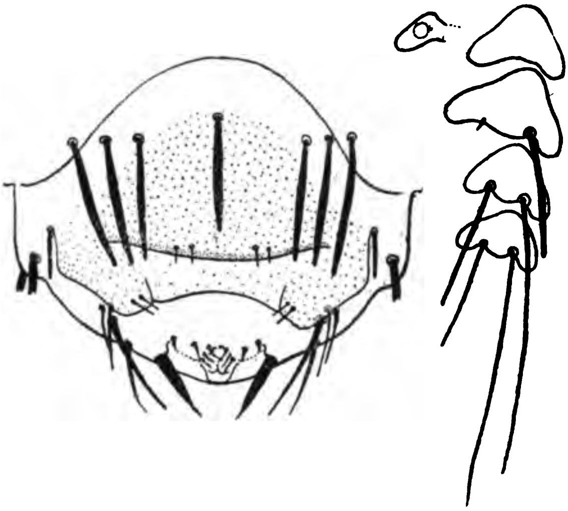


Fig. 15.—*Enderleinellus osborni* n. sp.; ventral side of terminal abdominal segments, and pleural plates of female.

Description of the Female.—Total length .6 mm., length of head .18 mm., length of abdomen .35 mm., width of head .1 mm., width of thorax .16 mm., width of abdomen .33 mm.

In size and general appearance closely resembling *E. suturalis*. Head, thorax and legs not appreciably different. The sternal plate, however, is longer than wide, four-sided, the lateral margins the longest, and the posterior margin longer than the anterior. Anterior and posterior margins slightly convex, lateral margins concave, all the angles rounded.

First segment of the abdomen with no hairs, second with a median group of one or two and with two near each lateral margin, all being quite short and slender. Third segment with a median group of two or three small spines and lateral group of two long flat spines. Fourth with a median group of four, of which the two inner ones are short and flat, and the two outer ones are extremely long and slender, reaching beyond the end of the body, and with two or three very large flat spines in each lateral group. Segments five to seven each with four spines in each median group and two or three in each lateral group. Eight and nine each with median group of two, those of nine being small; and seven and eight each with two long hairs at the posterior angle. There is considerable variability in the number and arrangement of the spines, particularly as regards the long hairs on the fourth segment. In some cases there may be three or even four of these, or some of the spines on the third segment may also be elongated.

On the ventral side the spines are much shorter and broader than on the dorsal side; segment two with none; segment three with a group of three on each side; four, five and six with three or four in the median group and two or three in each lateral group; seven with one median spine. Genital plate and gonapods very similar to those of *E. suturalis*.

Measurements of the Male.—Total length .61 mm., length of head .18 mm., length of abdomen .35 mm., width of head .1 mm., width of thorax .16 mm., width of abdomen .33 mm. Resembling the female except that the long hairs on the fourth segment are lacking. Genitalia not differing appreciably from those of *E. suturalis*.

Enderleinellus longiceps n. sp.

Plate II, fig. 5; plate IV, fig. 12; plate VI, fig. 2.

In the material which we have received from Professor Osborn there are several specimens of an undescribed Anopluran taken from gray squirrels at Lincoln, Nebraska, and with the permission of Professor Osborn we are describing the species. It is closely related to *Enderleinellus sphaerocephalus* (Burm.), which occurs upon squirrels in Europe; but there are certain very marked differences between the two, the shape of the head and especially the character of the male genitalia distinguishing the American species at once.

Description of the Female.—Total length .51 mm., length of head .14 mm., length of abdomen .33 mm., width of head .8 mm., width of thorax .14 mm., width of abdomen .25 mm.

Head much longer than broad, rather cylindrical in appearance, widest across the base of the antennae. Anterior margin slightly convex, lateral margins parallel, nearly straight, temporal angles entirely lacking. A few small hairs on the margin, a transverse row of four, arranged in two pairs just behind the antennae, a third row of four larger hairs just in front of the anterior margin of the thorax, and three small hairs on each temporal margin.

Antennae very close to the anterior margin of the head, the first segment almost entirely concealed beneath the head, and not conspicuously enlarged. Second segment slenderer, about as long as the first; third, fouth and fifth segments subequal, shorter than the second. Rostrum near the anterior margin.

Thorax wider than the head and longer than wide, rather hexagonal in shape, the lateral margins sharply convex. A short spine at each shoulder and a median pair of hairs on the posterior margin of the prothorax. Sternal plate spade-shaped, with a short handle-like projection anteriorly.

First and second pairs of legs rather small and slender, with slender claws. Third pair much larger and heavier, with very heavy claws, and with a small tooth-like projection on the anterior margin of both the femur and tarsus.

Abdomen short, oval, widening rather abruptly behind the second segment; which is only slightly wider than the thorax. No chitinized tergal or sternal plates, the'derm having a uniformly reticulated appearance. The hairs on each segment are arranged in three groups, a median group and a group near each lateral margin, the groups being distinctly separated. The arrangement of the spines in the lateral groups as follows: first segment, none; second segment, one in each group; third segment with two; fourth, fifth and sixth segments with three; eighth with one. Hairs in the median groups as follows: first, second and third segments with four; fourth, fifth and sixth with six; eighth with four; ninth with two. Seventh segment with the groups merging and forming an unbroken row of eight spines, and with two long hairs at each angle. Eighth likewise with two long hairs at each angle. Pleurites present on the second to fifth segments, small and with a short, rounded tooth at each posterior angle, and two or tree short spines on the posterior margin.

On the ventral side the first segment apparently lacking; second with one row of three or four spines; third with two rows, consisting of a median group of six and two lateral groups of two each. Fourth to sixth segments as on the dorsum. Seventh with four spines in the median group and one in each lateral group. Genital plate very large. Gonapods with several short hairs, a large, stout spine, and several hairs at each angle of the ninth segment. Third sternite with a pair of small chitinous plates, the posterior end of each slightly notched, and with a short spine in the notch.

DESCRIPTION OF THE MALE.—Total length .51 mm., length of head .14 mm., length of abdomen .32 mm., width of head .8 mm., width of thorax .15 mm., width of abdomen .25 mm.

Similar to female except in having the body more slender, and in the presence of a narrow, transverse, chitinized strip in front of each row of spines on the abdomen. Posterior end of the abdomen rounded. Genitalia very large and conspicuous and of a very peculiar form. Basal plate divided into two slender, widely-separated rods; parameres apparently lacking, although the homology of the parts is extremely obscure.

HAEMATOPINOIDES Osborn.

Haematopinoides Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., p. 28, (1891); Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 187, (1896).
Haematopinoides Enderlein, Zool. Anz., vol. 28, p. 140, (1904).
Haematopinoides Dalla Torre, Genera Insect., Anoplura, p. 15, (1908).

Antennae three-segmented. Middle and anterior legs small, posterior pair larger. Abdomen without chitinized tergal and sternal plates, but with the pleural plates present on the first to eighth segments, very large and overlapping.

Haematopinoides squamosus Osborn.

Haematopinoides squamosus Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., p. 28, fig. 16, (1891); Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 187, fig. 110, (1896).
Haematopinoides squamosus Enderlein, Zool. Anz., vol. 28, p. 136, (1904).
Haematopinoides squamosus Dalla Torre, Genera Insect., Anoplura, p. 15, fig. 10, (1908).

This singular species has been recorded but once, having been taken from a pocket gopher, *Geomys bursarius* (Ames, Iowa). We are inclined to believe that its natural host is not one of the *Geomyidae,* since the examination of many specimens of several species of Geomyids in California has not revealed it. Furthermore a very similar species, if not indeed the same, has been recorded from a mole. We have not been able to see the type of the species.

EUHAEMATOPINUS Osborn.

Euhaematopinus Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 186, (1896).
Euhaematopinus Enderlein, Zool. Anz., vol. 28, p. 140, (1904).
Euhaematopinus Dalla Torre, Genera Insect., Anoplura, p. 16, (1908).

Antennae three-segmented. Thorax with a pair of large spiracles.

Anterior and middle pairs of legs of nearly the same size. Posterior pair much larger and heavier, with broad heavy claw and with a stalked disk-shaped appendage on the femur and tibia. No tergal and sternal plates. Pleural plates present on first to eighth segments.

Euhaematopinus abnormis Osborn.

Plate III, fig. 3; plate V, figs. 4 and 9; text fig. 16.

Euhaematopinus abnormis Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 187, (1896).

Euhaematopinus abnormis Enderlein, Zool. Anz., vol. 28, p. 140, (1904).

Euhaematopinus abnormis Dalla Torre, Genera Insect., Anoplura, p. 16, (1908).

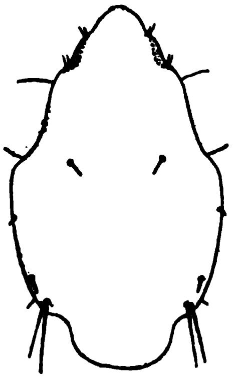


Fig. 16.—*Euhaematopinus abnormis* Osborn; head of female.

Through the kindness of Professor Osborn we have been permitted to examine the type of this species. It is extremely close to *Haematopinoides squamosus* Osborn, the only point of difference being the character of the posterior legs. These in *Euhaematopinus* are very short and heavy and bear a stalked disk-shaped appendage on the femur and tibia, while in *Haematopinoides* they are said to be normal. In all other respects—shape of the head, sternal plate and pleural plates, character of the antennae and absence of sternal and tergal plates—the species agrees entirely with Osborn's description and figure of *H. squamosus*. In fact we are strongly inclined to suspect that the two species are identical. The question can only be cleared up by the finding of the types of *H. squamosus*, unfortunately lost, or the re-discovery of the species. *Euhaematopinus abnormis* has been taken but once, from a mole, *Scalops argentatus* = *Scalopus aquaticus* (Ames, Iowa). We have examined several freshly-caught moles as well as several skins in the Stanford collection without finding it. We did, however, find eggs, apparently of an Anopluran, upon one skin.

Family ECHINOPHTHIRIIDAE Enderlein.

Echinophthiriidae Enderlein, Zool. Anz., vol. 28, p. 137, (1904).
Echinophthiriidae Enderlein, ibid., vol. 29, p. 661, (1905).
Echinophthiriidae Enderlein, Deutsche Südpolar Expedition, vol. 10, part. 4, pp. 476, 505, 506, (1909).
Echinophthiriidae Mjöberg, Arkiv. för Zoologi, vol. 6, no. 13, p. 176, (1912).
Lepidophthiriidae (in part) Mjöberg, ibid., p. 177.

Body thick and plump, thickly beset with spines or with scales. Head not prolonged cylindrically, widened posteriorly. Eyes entirely lacking. Antennae four- or five-jointed. Anterior legs smaller than the others, all, however, extremely stout. No distinct sternal plate. Abdomen without pleural plates.

In this family are included all the Anopluran parasites of marine mammals, such as the seals and walruses, and all are adapted by a thick coating of spines or scales to the aquatic life of their hosts. Mjöberg has proposed to divide the group into two families with regard to the presence or absence of scales, but with this view we are hardly inclined to agree. The family is small, containing at present but seven species (we are adding an eighth), of which four occur in North America or Greenland.

Genus **ANTARCTOPHTHIRUS** Enderlein.

Antarctophthirus Enderlein, Zool. Anz., vol. 28, pp. 136-137, (1904).
Antarctophthirus Enderlein, Deutsche Südpolar Exped., vol. 10, pt. 4, pp. 476, 508, figs. 172-177, text fig. KK, NN, (1909).
Arctophtirus (in part) Mjöberg, Arkiv. för Zoologi, vol. 6, no. 13, p. 177, (1910).

Antennae five-segmented. Anterior legs and claws much smaller and slenderer than the others. Spiracles small, one pair on the mesothorax and on each of the third to eighth abdominal segments. Head, thorax and abdomen beset with more or less short, stout spines, and with long hairs. Abdomen beset with scales on both dorsal and ventral sides. Scales present, but much more sparingly, on the thorax. There are at present but four species in this genus: one, *A. trichechi* (Boh.), occurring upon walruses, in the Arctic regions, the other three occurring upon as many species of seals in the Antarctic. Mjöberg has proposed placing *A. trichechi* in a separate genus, *Arctophtirus*, but we are unable to understand his reasons for doing so. We have at hand specimens of this species and of another which is undoubtedly new.

Antarctophthirus trichechi (Boh).

Plate III, fig. 1; text fig. 17, *B*.

Haematopinus trichechi Boheman, Vetensk Akad. Forhandl. (Kopenhagen) 12, p. 577, pl. 35, fig. II, IIa and II„ (1865).

Antarctophthirus trichechi Enderlein, Deutsche Südpolar Exped., vol. 10, pt. 4, pp. 505, 512-513, pls. 55-56, (1909).

Arctophtirus trichechi Mjöberg, Arkiv. för Zoologi, vol. 6, no. 13, pp. 177-180, (1910).

We have several specimens of this species, both males and females, taken from a "Pacific walrus" (northeast of Siberia) sent us by Professor Van Dyke of the University of California.

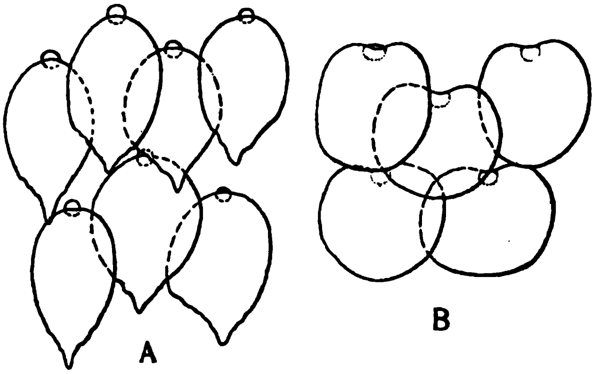


Fig. 17.—A, *Antarctophthirus monachus* n. sp., scales from abdomen.
B, *Antarctophthirus trichechi* (Boh.); scales from abdomen.

Antarctophthirus monachus n. sp.

Plate III, fig. 4; text fig. 17, *A*, and text fig. 18.

Among the material sent us by Professor Osborn are three specimens, two males and a female, of an undescribed species which we are referring to *Antarctophthirus*. The locality and exact host of the species are unknown, the specimens being labelled merely "On seal (?)." The species differs quite markedly from the others of the genus, being slenderer and much more spiny.

Description of the Female.—Total length 2.5 mm., length of head .5 mm., length of abdomen 1.6 mm., width of head .4 mm., width of thorax .5 mm., width of abdomen approximately 1 mm.

Head short and broad, the anterior margin slightly convex, the temporal angles sharp and very prominent. Temporal margins nearly straight, diverging very slightly for a short distance, then converging to form the occiput. Occipital margin straight. Temporal margins with one short, stout spine, followed by two long stout hairs. A transverse row of six long spines across the occiput, with a median pair of short, stout spines. A distinct transverse row of six or eight very short, blunt spines just within the anterior margin, and numerous spines rather irregularly arranged about the head.

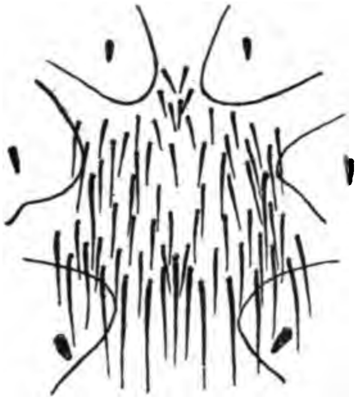


Fig. 18.—*Antarctophthirus monachus* n. sp.; ventral side of thorax.

Antennae five-segmented, set very close to the anterior margin; the first segment large, the second slightly narrower but about as long, the remainder successively shorter and narrower. Under side of the head with a raised median portion bearing numerous short, slender hairs, with a thick fringe of long, slender hairs about the lateral and posterior margins. Rostrum very short, close to the anterior margin.

Thorax only slightly wider and somewhat longer than the head, not widening posteriorly, entirely free from scales. Anterior margin with a slight V-shaped notch, the posterior margin nearly straight. Mesothorax with a median area bearing many short, blunt spines and rather long hairs, and with numerous spines and hairs along the lateral margins. Metathorax with an irregular, transverse row of eight to twelve stout hairs and several smaller ones. Legs very large and stout, the middle and posterior pair of nearly the same size, the anterior pair much smaller. No distinct sternal plate, the space between the coxae bearing many slender, irregularly arranged hairs, of which those at the posterior margin are longer and stouter than the remainder.

Abdomen elongated oval, slightly pointed posteriorly. First to third segments with numerous short, stout spines, and with a transverse row of slender hairs along the posterior margin. Succeeding segments with a diminishing number of hairs and spines, these being replaced by small, thin scales, particularly along the lateral margins.

Ventral side thickly beset with short, stout spines, and with no scales except on the seventh and eighth segments, where the spines are almost entirely replaced by scales. Ninth segment and the posterior margin of the eighth with a great number of long, slender hairs.

DESCRIPTION OF THE MALE.—Total length 2.4 mm., length of head .5 mm., length of abdomen 1.55 mm., width of head .4 mm., width of thorax .5 mm., width of abdomen 1.00 mm.

Closely resembling the female, except for the slightly more pointed abdomen. Ventrally almost entirely free from scales. Basal plate broad, more heavily chitinized at the margins than elsewhere. Parameres very short and slender. Penis large and bluntly pointed.

Genus **ECHINOPHTHIRIUS** Enderlein.

Echinophthirius Giebel, Zeitschr. für Ges. Naturw., vol. 37, p. 177, (1871).
Echinophthirius Enderlein, Zool. Anz., vol. 29, p. 661, (1906).
Echinophthirius Enderlein, Deutsche Südpolar Exped., vol. 10, pt. 4, p. 507, (1909).

Antennae four-segmented. Body entirely without scales. Head, thorax and abdomen beset with long, heavy spines.

Echinophthirius phocae (Lucas).

Reported by Osborn, as *E. setosus*, from harbor seals in the New York Aquarium.

In addition *Echinophthirius groenlandicus* (Becher), host *Phoca groenlandica*, and *Echinophthirius sericeus* Meinert, have been reported from Greenland.

V

DEGREE OF HOST PARASITIZATION.

In addition to a record of the hosts upon which parasite species have been found, it is very desirable to know also those host species which have been examined for parasites with negative results. In fact if we are to arrive at a proper understanding of the problems of species distribution among the parasites, then negative records are in many cases of an importance almost equal to the positive records. Even though repeated failures to find a certain parasite upon a certain host can never be regarded as absolute proof that that particular parasite does not occur upon that particular host, the record of such failures does at least give much aid in judging whether our positive records of the occurrence of a parasite species upon that host are to be accepted unquestioningly or are to be regarded with suspicion. While straggling, or the accidental occurrence upon a host species of a parasite not normal to it, is not a very common occurrence, it does sometimes happen. The appearance upon a carnivorous host of parasites normally found upon the prey of that host, or especially the transference of parasites from one host to another in the game-bag or on the skinning-table may, and in fact do, sometimes occur. In such cases, and in the case of parasites taken from skins in museums and from hosts which have been confined in zoological gardens, negative records, whenever available, are unquestionably of extremely great value. Because of these facts we are adding what may very well be called a negative host record, including only those host species which we ourselves have examined for parasites with negative results.

We have found no Mallophaga upon any of the *Sciuridae* represented by several species and many individuals of the genera *Sciurus, Eutamias, Citellus, Callospermophilus, Arctomys* and *Sciuropterus,* nor upon any of the *Muridae* represented by the genera *Peromyscus, Microtus, Phenacomys* and *Mus.* There have previously been isolated records of the occurrence of Mallophaga upon certain Sciurids, but the evidence indicates very strongly that neither the *Sciuridae* nor the *Muridae* normally possess a Mallophagan species.

We have found neither Mallophaga nor Anoplura upon any of the following: the *Soricidae*, represented by *Sorex vagrans*, *S. montereyensis* and *Neosorex bendirei*; the *Talpidae*, represented by *Scapanus latimanus* and *Neurotrichus gibbsi*; the *Zapodidae*, represented by *Zapus orarius* and *Z. trinotatus alleni*; the *Aplodontidae*, represented by *Aplodontia phaea*; the *Didelphidae* (Marsupialia), represented by *Didelphys* sp. The number of individuals examined in each of the above cases is for the most part very small, ranging from three in the case of *Didelphys* sp. to twenty-five or thirty in the case of the two species of *Sorex*. For this reason it is extremely probable that some of these negative conditions will be changed by further investigation.

We have found no Anoplura, with the exception of one case previously discussed, on any of the *Mustelidae*, represented by two species of skunks, *Mephitis occidentalis* and *Spilogale phenax*, one species of badger, *Taxidea taxus*, and one species of weasel, *Putorius xanthogenes mundis*. The *Felidae*, represented by two or three individuals of one species, *Lynx californicus*, and the *Geomyidae*, represented by perhaps a hundred individuals of several species of the genus *Thomomys*, have likewise produced no Anoplura. All these species, however, are represented in the Mallophagan host list.

A few observations in regard to the occurrence of parasites upon the individual hosts may perhaps be of some interest. Mjöberg has stated that in general but one species of Anoplura occurs upon any host species; but this is by no means always the case. Many of the *Sciuridae* are regularly parasitized by two species of Anoplura, and probably sometimes even by three; and the various species of the genus *Microtus*, of the *Muridae*, is regularly parasitized by two species. The white-footed mice of the genus *Peromyscus* likewise harbor two Anopluran species, altho one of these is evidently rather rare. It is, however, an interesting fact, whether of any significance or not, that those host species which are the most heavily parasitized by Mallophaga do not harbor any Anoplura; and the reverse is also true. The *Sciuridae* and *Muridae*, which collectively harbor four or five genera and numerous species of Anoplura, do not seem to possess a single Mallophagan species; and the *Mustelidae* and *Geomyidae*, which have several species of Mallophaga and are individually very heavily parasitized, apparently do not normally possess any Anoplura.

The degree of parasitization of the individual hosts is extremely variable; but in general it may be said that hardly half of the host individuals of a parasitized host species are sufficiently infested to permit of finding the parasites; indeed in many cases the percentage is even smaller. Out of perhaps fifteen rabbits representing two species of different genera, which we have examined, but one was found to be parasitized. Attempts to correlate the presence or absence of parasites with the life habits of the hosts have thus far proven entirely unsuccessful. It might be surmised that the host species which hibernate for long periods, with a very marked decrease in their body temperature, or those species which spend a large part of their life in water, would be free from parasites; yet this is not at all the case. The Point Barrow ground squirrel, which must hibernate for more than half its life, and the various species of seals and walruses, are not at all lacking in uninvited guests.

VI

NORTH AMERICAN MALLOPHAGA FROM MAMMALS

The list of the Mallophaga recorded from American mammals (including the records of this paper) comprises twenty-seven species, of which nine occur upon domesticated hosts.

These twenty-seven species are distributed among five genera, of which four—*Heterodoxus, Trimenopon, Gliricola* and *Gyropus*—are represented by a single species each. The other species all belong to the genus *Trichodectes,* which, as a matter of fact, includes four-fifths of all the mammal-infesting Mallophaga. (In a recent paper, "Ectoparasites of Mammals," published in the American Naturalist, vol. 48, pp. 257-279, 1914, the senior author discusses in some detail the interesting conditions of the generic distribution of Mallophaga among the mammals.)

The species of the genus *Trichodectes* find their hosts among such extremely diverse mammals—diverse as to habits as well as phylogeny—as gophers, beavers, pocket-rats, skunks, badgers, porcupines, cats, dogs, horses, cattle, goats, sheep, deer, and even monkeys. Yet in spite of this wide range of hosts, the genus is remarkably homogeneous, there being but little breaking up of the species into particular groups associated with particular groups of phyletically or habit-related hosts.

In this respect the mammal-infesting Mallophaga present a striking and interesting contrast with the other group of permanent ectoparasites of mammals, that is, the Anoplura. Among these latter there is an extremely pronounced breaking up into groups—groups fairly characterized as distinct genera, sub-families and even families—the species of each of which are characteristic of certain restricted groups of hosts. It is, indeed, a rule almost without exception that any single Anopluran genus is confined to a single host order, or even to a single host family.

It is probable that a closer study of the mammalian Mallophaga will warrant some breaking-up of the large genus *Trichodectes* into three or four lesser genera; one or two students have made a beginning of such an analysis. But the possibilities of such a breaking-up are limited; the plain truth is, that the differentiation and heterogeneous specialization of the Anoplura is far and away beyond that of the Mallophaga.

However, such a condition is but the one to be expected. It should be not at all surprising that parasites which come into such more intimate relations with their hosts as do the blood-sucking ones (the Anoplura) as compared with the hair and dermal-scale feeding ones (the Mallophaga) should reveal a much more exact fitting to their host, involving structural and physiological specialization.

Although in listing in the following pages all the species of *Trichodectes* so far recorded from North American mammals we have believed it advisable to indicate our belief that certain species are only synonyms of certain others, we have by no means attempted to make a complete revision of the North American species of the genus. This undertaking we may postpone until a planned attempt to make a revision of the whole genus as at present known from both New World and Old World records can be taken up.

VII.

DESCRIPTIONS OF NEW SPECIES, AND DETERMINATIONS OF OLD SPECIES OF MALLOPHAGA.

Genus **TRICHODECTES** Nitzsch.

Antennae three-segmented; tarsi with one claw, infesting mammals only. The only genus in the family *Trichodectidae*.

This genus, as stated above, is found upon a wide variety of hosts. An attempt has recently been made to break it up, Mjöberg having proposed a genus, ***Eutrichophilus***, for certain species found upon porcupines and deer. The attempt, however, is not very convincing. There are between fifty and sixty known species, of which twenty-three have been recorded from North America.

Trichodectes parumpilosus Piaget.

Trichodectes parumpilosus Piaget, Les Pediculines, p. 397, pl. 32, fig. 5, (1880).

This species is apparently very common on the domestic horse. We have numerous specimens, and it has previously been reported by Osborn. Another species, *T. pilosus* Giebel, has also been described from horses, but has not yet been reported from North America.

Trichodectes scalaris Nitzsch.

Trichodectes scalaris Nitzsch, in Giebel, Ins. Epiz., p. 61, pl. 3, fig. 7, 9, (1874).

Occurs on domestic cattle. It has been reported by Osborn, and we also have specimens.

Trichodectes climax Nitzsch.

Trichodectes climax Nitzsch, Germar's Mag., vol. 3, p. 296, (1818).
Trichodectes limbatus Gervais, Hist. Ins. Aptéres, vol. 3, p. 313, pl. 7, fig. 1, (1848).

An extremely common parasite of domestic goats. Another species, *T. limbatus* Gervais, has also been described from goats; but we are inclined to believe with Osborn that the two species are identical.

Trichodectes hermsi Kellogg & Nakayama.

Trichodectes hermsi Kellogg & Nakayama, Psyche, vol. 22, (in press, 1915).

Described from specimens taken from Angora goats at Inverness, Marin county, Calif. It is easily distinguishable from *T. climax* by its large size and the numerous short, spiny hairs irregularly disposed on the head and abdomen, in this respect resembling *T. pilosus.* However, it differs from *T. pilosus* in being considerably larger and in the marked disparity in the size of the male and female.

Trichodectes latus Nitzsch.

Trichodectes latus Nitzsch, in Giebel, Ins. Epiz., p. 53, pl. 3, figs. 2, 3, (1874).

Occurs upon the domestic dog. It is said by Osborn to be of rather common occurrence, but we have not met with it.

Trichodectes subrostratus Nitzsch.

Trichodectes subrostratus Nitzsch, in Giebel, Ins. Epiz., p. 55, pl. 3, fig. 5, (1874).

This is a well known parasite of the domestic cat, and is apparently normal to wildcats also. It has been recorded by Paine from a wildcat, *Lynx californicus* (San Gregorio, Calif.), and we have specimens taken from the same host at Gualala, Mendocino county, Calif.

Trichodectes sphaerocephalus Nitzsch.

Trichodectes sphaerocephalus Nitzsch, in Giebel, Ins. Epiz., p. 60, (1874).

Reported by Osborn as common upon sheep at Ames, Iowa. We have not yet met with it.

Trichodectes tibialis Piaget.

Trichodectes tibialis Piaget, Les Pediculines, p. 299, pl. 32, fig. 6, (1880).

Osborn referred to this species, specimens taken from "black-tailed deer," and we have specimens from *Odocoileus columbianus* (Covelo and Gualala, Calif.). It is rather doubtful that this is the same as the European species.

Trichodectes parallelus Osborn.

Trichodectes parallelus Osborn, Bul. 5, o. s. U. S. Dept. Agr., Div. Ent., pp. 240-241, fig. 148, (1891).

Described by Osborn from specimens from deer, probably *Cariacus* *virginianus.* We have specimens from "red deer," (Michigan). It may easily be distinguished from *T. tibialis* by the abdomen, which is slender and much narrower than the head.

Trichodectes (Eutrichophilus) mazama Stobbe.

Eutrichophilus mexicanus Mjöberg, Arkiv. för Zoologi, vol. 6, pp. 79-82, (1910). Specific name preoccupied.
Eutrichophilus mazama Stobbe, Deut. Ent. Zeit., p. 562, (1913).

Described from specimens in the Hamburg Zool. Mus. taken from *Cervus mexicana* (Mexico). It apparently differs from the two preceding species chiefly in the very large first antennal segment of the male.

Trichodectes (Eutrichophilus) setosus Giebel.

Trichodectes setosus Giebel, Ins. Epiz., p. 56, (1874).
Eutrichophilus setosus Mjöberg, Arkiv. för Zoologi, vol. 6, p. 73, (1910).

This species is apparently common to the porcupines of both Europe and America. Osborn has recorded it from *Erethizon dorsatum* (Nebraska), and we have specimens from *Erethizon epixanthum* (California and Alaska). Mjöberg has described three species, *T. (Eutr.) minor, T. (Eutr.) cordiceps,* and *T. (Eutr.) cercolabes,* all from *Coëndu (Cercolabes) prehensilis,* a South American porcupine. It is indeed most extraordinary to find three closely related species of Mallophaga upon the same host, and Neumann is of the opinion that they are merely forms of *T. setosus.* Stobbe, however, has examined Mjöberg's material, and in addition to agreeing with Mjöberg has added still a fourth species from another host of the same genus. In addition to these there is still a fifth species, *T. mexicanus* Rudow from *Coëndu novae-hispaniae,* making five species described from the same host genus and six from this one small family. It is all rather bewildering.

Trichodectes mexicanus Rudow.

Trichodectes mexicanus Rudow, Zeit. f. ges. Naturw., vol. 27, pl. 6, fig. 2, (1876).

From *Coëndu (Cercolabes) mexicanus,* a Mexican porcupine.

Trichodectes (Eutrichophilus) coëndu Stobbe.

Eutrichophilus coëndu Stobbe, Ent. Zeit., pp. 566-567, (1913).

From *Coëndu novae-hispaniae,* a Mexican porcupine.

Trichodectes geomydis Osborn.

Plate VIII, figs. 1, 3 and 6.

Trichodectes geomydis Osborn, Bul. 7, n. s. U. S. Dept. Agr., Div. Ent., p. 54, fig. 42, (1896).
Trichodectes californicus Chapman, Ent. News, vol. 8, pp. 186-187, pl. 9, (1897).
Trichodectes californicus Paine, Ent. News, vol. 23, p. 440, pl. 20, fig. 2, (1912).

Specimens from *Thomomys bottae laticeps* (California) and *Thomomys* sp. (S. Yolla Bolly Mt., Tehama county, California). The species has previously been recorded from *Thomomys* species in California, *Geomys bursarius* from Iowa, and a Central American Geomyid, *Macrotomys heterodus*, from Costa Rica. It has been stated that the species is closely related to *T. mephitidis* Osborn; yet the two are really quite different, the projection on the posterior margin of the first antennal segment of the male and the stout antennae of the female, distinguishing *T. geomydis* at once; and any revision of the genus would probably place these two species in separate subgenera, at least.

The examination of the types of *Trichodectes californicus* Chapman has convinced us that this species cannot be considered as distinct from *T. geomydis*. *T. californicus* has been reported from *Perognathus* sp. (Baja California) and *Dipodomys merriami* (Arizona).

Trichodectes castoris Osborn.

Trichodectes castoris Osborn, Bul. 5, n. s. U. S. Dept. Agr., Div. Ent., p. 241, fig. 149, (1896).

From beaver, *Castor castoris*. We have not seen this species. Osborn states that it is very similar to both *T. geomydis* and *T. mephitidis*, but that "the shallowness of the frontal hollow distinguishes it easily from *geomydis*, and the form of the head and greater length of the antennae from *mephitidis*."

Trichodectes mephitidis Osborn.

Plate VIII, figs. 2, 4, 5.

Trichodectes mephitidis Osborn, Bul. n. s. U. S. Dept. Agr., Div. Ent., p. 242, fig. 150, (1896).
Trichodectes minutus Paine, Ent. News, vol. 23, pp. 439-440, pl. 20, fig. 4, (1912).

Numerous specimens from *Mephitis occidentalis* (San Hedrin Mt. and Palo Alto, Calif.), *Spilogale phenax* (Marin county, Calif.), *Mephitis* *macrura* (Arizona), and *Putorius xanthogenes* (Point Arena, Calif.). This species was originally described from specimens taken from *Mephitis mephitica* (Nebraska) and *Spilogale interrupta* (Iowa). It has also been recorded from a South American skunk (Choro, Bolivia), this record, however, being erroneous; and also from a Bornean mustelid, *Halictis everetti*, this record, too, probably being erroneous.

Quite recently Paine has described a species, *T. minutus*, from a weasel, *Putorius noveboracenis*, which we are inclined to regard as a synonym of *T. mephitidis*. We do not have specimens of *T. minutus*, but we do have numerous specimens from weasels which are undoubtedly *T. mephitidis*, and also agree very well with the description of *T. minutus*. There are indeed some differences between the specimens from the different hosts, but not sufficient to warrant regarding them as representing distinct species.

Trichodectes crassus Nitzsch.

Plate VII, fig. 4.

Trichodectes crassus Nitzsch, in Giebel, Ins. Epiz., p. 54, (1874).

This species has been recorded from the Old World badger, and Osborn has recorded it with some doubt from an American raccoon, *Procyon psora*. A German record also attributes *T. crassus* to a raccoon (in some zoological garden); but since the raccoons harbor another very distinct species, *T. octomaculatus* Paine, we are much inclined to doubt these records. Our figure is from specimens which we have received from Europe, and is inserted for the sake of comparison with the other species from Mustelids.

Trichodectes interrupto-fasciatus n. sp.

Plate VII, figs. 1, 2 and 3.

Trichodectes mephitidis (in part) Kellogg, Amer. Nat., vol. 48, p. 269, (1914).

Several males and females from a badger, *Taxidea taxus*, (South Yolla Bolly Mt., Tehama county, Calif.), and also several males and females from a skunk, (Choro, Bolivia, South America). The latter specimens have been previously recorded as *T. mephitidis* Osborn.

This species is one of a fairly well defined carnivore-infesting group which includes *T. latus*, from the domestic dog, *T. vulpis*, from European foxes, *T. crassus*, from the European badger, and *T. mephitidis*, from skunks. It differs markedly from *T. crassus* in the much more rounded temples of the male, and apparently is closest to *T. mephitidis*. It differs from the latter chiefly in being much larger, in having the anterior margin of the head much less rounded, and in the character of the genitalia of the male. While it is rather peculiar to find the same species upon a North American badger and a South American skunk, the specimens from the two hosts agree in practically every detail.

DESCRIPTION OF THE FEMALE.—Total length 1.57 mm., length of head, .425 mm., length of prothorax .11 mm., length of metathorax .09 mm., length of abdomen .95 mm., width of head across temple .675 mm., width of prothorax .425 mm., width of metathorax .535 mm., width of abdomen .9 mm.

Head slightly wider than long and with the anterior margin but slightly rounded, with a very shallow median notch, and produced into prominent, trabecula-like process in front of each antenna. Antennal sinuses rather small and shallow. Ocular projections prominent, extending well beyond the temples, which are rounded and meet the occipital margin with a slight angle. Occipital margin nearly straight, slightly emarginate at the points where it is met by the occipital bands. Antennal bands broad and very dark, separated from each other at the front of the head by a very small clear space, and interrupted across the base of the antennae, not reaching the ocular blotch. Occipital bands very short, connected at their bases by a broad band. Anterior margin and temples with several short hairs, the posterior margin with one long hair near the temporal angle. Antennae rather small, not reaching the posterior margin of the head. First and third segments of nearly the same length, the second segment a little shorter.

Prothorax very short and broad, and with the posterior margin slightly convex. A single short spine at each posterior lateral angle, and one on each side of the meson on the posterior margin. Mesothorax a trifle shorter than the prothorax and somewhat broader, the lateral margins curved and converging slightly, the posterior margin slightly convex except for a slight median emargination. Lateral margin with three or four short spines, posterior margin with a median group of eight spines. Legs normal.

Abdomen elliptical in shape, only a little longer than wide, and with a narrow, hyaline band along the lateral margin. First segment with a median group of eight or nine spines. Second to fourth segments each with transverse row of spines divided into three distinct groups, the median group consisting of eight to twelve spines, and each lateral group of six to eight spines. Fifth to seventh segments each with a continuous transverse row of about thirty spines. Eighth segment with a median group of four spines and a single spine near each posterior-lateral angle. Ninth segment with several short spines along the lateral margins; the succeeding segments, except the ninth, each with a pair of spines near the middle of the lateral margin of the segment, these spines on the seventh and eighth segments being longer than on the others.

DESCRIPTION OF THE MALE.—Total length 1.55 mm., length of head .375 mm., length of prothorax .15 mm., length of metathorax .075 mm., length of abdomen .95 mm., width of head across temples .5 mm., width of prothorax .35 mm., width of metathorax .4 mm., width of abdomen .75 mm.

Head with the anterior margin nearly straight, with no median notch, and produced into trabecula-like processes in front of the antennae. Antennal sinuses deep and sharply angular. Ocular projections small, not extending beyond the extreme margin of the temples, which are smoothly rounded and meet the occipital margin without an angle. Occipital margin nearly straight, slightly emarginate where it is met by the occipital bands. Antennal bands narrow, widening somewhat at the front of the head, where they are separated from each other only by a very small clear area, and interrupted across the base of the antennae, not reaching the ocular blotch. Occipital bands short, united at their bases by a narrow band. Several short hairs on the anterior margin and temples, and one rather long hair on each side of the occipital margin.

Antennae large and backward-pointing, reaching somewhat beyond the occipital margin of the head; the first joint large and as long or perhaps a trifle longer than the second and third combined. Third joint a little longer than the second, both being slightly curved. First joint with a row of four short spines on the dorsal side, second and third joints with several rather long hairs, the third with two short teeth on the inner margin at the distal end.

Thorax about one and one-fourth times as wide as long. Prothorax trapezoidal in shape, widest across the posterior margin, which is nearly straight, and with a short spine at each posterior margin. Metathorax about half as long as the prothorax and a trifle wider, the lateral margins curved, converging slightly, and bearing several short spines, the posterior margin nearly straight but with a slight median emargination and with a median group of six spines. Legs normal.

Abdomen oval, widest across the anterior margin of the fourth segment and with a narrow hyaline band at the margins. First segment with a median group of six spines on the posterior margin. Second to seventh segments each with a transverse row of spines divided into three distinct groups, the median group containing from six to eight spines and each lateral group five to seven spines. Eighth segment with a continuous transverse row of ten or twelve spines. Ninth segment with numerous short spines at the tip. First and second segments with several short spines along the lateral margins, the second to eighth segments each with a pair of spines near the middle of the lateral margin, those on the seventh and eighth segments being longer than the others. On the ventral side the spines in the transverse rows are more numerous, there being from twelve to fourteen in the median groups.

Genitalia conspicuous, the basal plate consisting of two chitinous bars which are widened and thickened at their posterior ends. Penis long and stout, the arms not diverging widely and being but slightly longer than the shaft. Beneath the penis a short, cuneiform, backward-pointing plate, with the posterior end deeply bifid.

Trichodectes retusus Nitzsch.

Trichodectes retusus Nitzsch, in Giebel, Ins. Epiz., p. 55, pl. 3, fig. 4, (1874).

Reported by Osborn from a weasel (Ames, Iowa). It was originally described from an Old World weasel.

Trichodectes octomaculatus Paine.

Trichodectes octomaculatus Paine, Ent. News, vol. 32, pp. 438-439, pl. 20, fig. 1, (1912).
Trichodectes procyonis Neumann, Arch. de Parasit., vol. 15, pp. 624-626, fig. 14, (1913).

This species was described from a raccoon, *Procyon psora* (Stanford University, Calif.), and we have since met with it on the same host. We have not seen specimens of Neumann's *T. procyonis*, but the comparison of our specimens with his description and figure has convinced us that *T. procyonis* is identical with *T. octomaculatus.* Neumann's specimens were from *Procyon lotor* (British Columbia).

Trichodectes quadraticeps Chapman.

Trichodectes quadraticeps Chapman, Ent. News, vol. 8, p. 185, fig., (1887).

Specimens from *Urocyon cinereo-argenteus sequoiensis* (Freestone, Sonoma county, Calif.). Originally described from specimens taken from the same host.

Trichodectes pallidus Piaget.

Trichodectes pallidus Piaget, Les Pediculines, p. 405, pl. 32, fig. 9, (1880).

From *Nasua narica* (Zool. Garden, Rotterdam). The host is a native of Mexico and Central America.

Trichodectes nasuatis Osborn.

Trichodectes nasuatis Osborn, Ohio Natur., vol. 2, p. 178, pl. 1, fig. 3, (1902).

From *Nasua narica* (Central America). It is extremely likely that this is the same as *T. pallidus* Piaget.

Trichodectes painei Kell. & Nak.

Trichodectes painei Kellogg & Nakayama, Psyche, vol. 21, pp. 90-92, fig. 1, (1914).

From unknown host (Baja California). It is easily recognizable by the extremely long claws and the emarginate posterior margin of the second abdominal tergite of the male.

Trichodectes thoracicus Osborn.

Trichodectes thoracicus Osborn, Ohio Natur., vol. 2, p. 178, pl. 2, fig. 4, (1902).

From *Bassariscus astuta* (California).

Genus **GYROPUS** Nitzsch.

Gyropus Nitzsch, Germar's Mag., vol. 3, p. 302, (1818).

Antennae concealed beneath the head, four-segmented, the fourth segment very large; temples produced into angulated processes, mouthparts on the frontal margin of the head. Tarsi with one claw, which is well developed. Occuring exclusively upon mammals.

The members of this genus occur upon animals all of which are native to South America, although one of its hosts, the common guinea-pig, is now found in all parts of the world.

Gyropus ovalis Nitzsch.

Gyropus ovalis Nitzsch, Germar's Mag., vol. 3, p. 304, (1818).

Common upon the ordinary guinea-pig.

Genus **GLIRICOLA** Mjöberg.

Gliricola Mjöberg, Arkiv. för Zoologi, vol. 13, p. 18, (1910).

Very close to Gyropus, differing chiefly from that genus in having the claws very much reduced in size.

Gliricola porcelli (Schrank).

Pediculus porcelli Schrank, Enumeratio insectorum, Austriae indigenorum, p. 500, pl. 1, fig. 1, (1781).
Gyropus gracilis Nitzsch, Germar's Mag., vol. 3, p. 304, (1818).
Gliricola gracilis Mjöberg, Arkiv. för Zoologi, vol. 6, p. 20, (1910).
Gyropus porcelli Neumann, Bul. Zool. Soc. de France, vol. 37, pp. 213-216, figs. 1 and 2, (1912).
Gyropus bicaudatus Paine, Ent. News, vol. 23, p. 441, pl. 20, figs. 3 and 3*c*, (1912).
Gliricola porcelli Stobbe, Deut. Ent. Zeit., p. 117, (1914).

Extremely common upon the ordinary guinea-pig.

Genus **TRIMENOPON** Cummings.

Trimenopon Cummings, Bul. Ent. Res., vol. 4, pp. 39-40, (1913).

Antennae five-jointed, concealed in fossae beneath the head. Tarsi with two claws. Pronotum with well developed lateral wings. Head and thorax together nearly as long as the abdomen.

Trimenopon jenningsi (Kellogg & Paine).

Menopon jenningsi Kellogg & Paine, Ent. News, vol. 21, pp. 461-462, fig. 1, (1910).
Trimenopon echinoderma Cummings, Bul. Ent. Res., vol. 4, fig. 4, (1913).
Trimenopon jenningsi Stobbe, Deut. Ent. Zeit., p. 177, (1914).

Originally described from a tame guinea-pig, *Cavia cobaya* (Panama Canal Zone), and later recorded from wild guinea-pigs from South America.

Genus **HETERODOXUS** Le Souef & Bullen.

Heterodoxus Le Souef & Bullen, Victorian Nat., vol. 18, p. 159, (1902).
Heterodoxus Paine, Ent. News, vol. 23, pp. 360-361, (1912).

Antennae four-segmented, concealed beneath the head. Head conical, broader than long, front rounded, sides straight, ocular emarginations lacking. Thorax well developed, the mesothorax present but quite small. Tarsi with two claws.

Heterodoxus longitarsus (Piaget).

Menopon longitarsus Piaget, Les Pediculines, p. 504, pl. 41, fig. 7, (1880).
Heterodoxus macropus Le Souef & Bullen, Victorian Nat., vol. 18, p. 159, (1902).
Menopon spiniger Enderlein, Anopluren u. Mallophagen, Schultz, Forschungsreise in Südafrika; Jenais. Denkschr., vol. 14, pp. 80-81, (1909).
Heterodoxus longitarsus Neumann, Arch. de Parisitologie, vol. 15, p. 634, (1913).

This species was originally described from a species of kangaroo, and there are several other records of its occurrence upon kangaroos. Yet it has also been recorded from the domestic dog, once from Africa, once from Formosa and once from California. However, it is extremely probable that kangaroos are its normal hosts and the other records are due to straggling from kangaroos in museums and zoological gardens, for it certainly is not of common occurrence upon dogs.

NOTE.—While this paper is passing through the press we have received numerous specimens of *H. longitarsus* taken from a dog at San Francisco, Calif.

VIII

MAMMALIAN HOST LIST OF NORTH AMERICAN ANOPLURA AND MALLOPHAGA

The orders and families are arranged as in Beddard's "Mammalia," 1902. The synonomy of the hosts has been worked out from the "List of North American Land Mammals in the United States National Museum," 1911.

Order UNGULATA.

Family EQUIDAE

Equus caballus (Horse).
  *(A) *Haematopinus asini* (Linné).
  *(M) *Trichodectes parumpilosus* Piaget.
Equus asinus (Donkey).
  (A) *Haematopinus asini* (Linné).

Family SUIDAE

Sus scrofa domestica (Domestic Pig).
  (A) *Haematopinus suis* L.

Family CERVIDAE

Cervus mexicanus (Southern Mexico).
  (M) *Trichodectes (Eutrichophilus) mazama* Stobbe (Zool. Gard. Hamb.).
Cariacus virginianus (Virginia Deer).
  (M) *Trichodectes parallelus* Osborn.
"Cearrus-Hirsch."
  (A) *Linognathus breviceps* Piaget (?) (Guatemala).
Red Deer.
  (M) *Trichodectes parallelus* Osborn (Michigan).
Black-tailed Deer (Northern and Western U. S.).
  (M) *Trichodectes tibialis* Piaget.
Odocoileus columbianus.
  Trichodectes tibialis Piaget (California).
Odocoileus hemionus (Western United States).
  (M) *Trichodectes tibialis* Piaget (Zool. Gard. Berlin).

---

*(A) indicates an Anopluran species, (M) a Mallophagan one.

Family BOVIDAE.

Bos taurus (Domestic Cow).
  (A) *Haematopinus eurysternus* Nitzsch.
  (A) *Linognathus vituli* (Linné).
  (M) *Trichodectes scalaris* Nitzsch.
Bos americanus (Bison).
  (A) *Haematopinus tuberculatus* (Burmeister).
Ovis aries (Domestic Sheep).
  (A) *Linognathus pedalis* (Osborn).
Capra hircus (Domestic Goat).
  (A) *Linognathus stenopsis* (Burm.).
  (M) *Trichodectes climax* Nitzsch.
Angora Goat.
  (M) *Trichodectes climax* Nitzsch.
  (M) *Trichodectes hermsi* Kellogg & Nakayama (California).

Order CARNIVORA

Family FELIDAE

Felis domestica (Domestic Cat).
  (M) *Trichodectes subrostratus* Nitzsch (California).
Lynx californicus (Wild Cat).
  (M) *Trichodectes subrostratus* (California).

Family CANIDAE.

Canis familiaris (Domestic Dog).
  (A) *Linognathus piliferus* (Burm.).
  (M) *Trichodectes latus* Nitzsch.
  (M) *Heterodoxus longitarsus* (Piaget).
Urocyon cinereoargenteus sequoiensis (Fox).
  (M) *Trichodectes quadraticeps* Chapman (California).
Urocyon cinereoargenteus.
  (M) *Trichodectes quadraticeps* Chapman (California).
Procyon lotor (Raccoon).
  (M) *Trichodectes crassus* Nitzsch.
  (M) *Trichodectes octomaculatus* Paine (British Columbia).
Procyon psora (Western Raccoon).
  (M) *Trichodectes octomaculatus* Paine (California).

Bassariscus astuta (Ring-tailed Cat).
(M) *Trichodectes mephitidis* Osborn (California).
(M) *Trichodectes thoracicus* Osborn (California; Berlin Museum).
Nasua narica (Coati).
(M) *Trichodectes nasuatis* Osborn (Costa Rica).
(M) *Trichodectes pallidus* Piaget.

Family MUSTELIDAE.

Taxidea taxus (Badger).
(M) *Trichodectes interrupto-fasciatus* Kellogg & Ferris (California).
Putorius ermineus (Ermine).
(M) *Trichodectes retusus* Nitzsch.
Putorius noveboracensis.
(M) *Trichodectes mephitidis* Osborn (Illinois).
Putorius xanthogenes mundis.
(M) *Trichodectes mephitidis* Osborn (California).
Putorius vison.
(M) *Lipeurus dissimilis* Piaget (North Carolina).
(Probably straggler from bird prey.)
Mephitis mephitica (Skunk).
(M) *Trichodectes mephitidis* Osborn (Nebraska).
(M) *Goniodes mephitidis* Packard.
(Probably a straggler from bird prey.)
Mephitis occidentalis.
(M) *Trichodectes mephitidis* Osborn (California).
(A) *Neohaematopinus pacificus* Kellogg & Ferris.
(Probably straggler from chipmunk prey.)
Mephitis macrura.
(M) *Trichodectes mephitidis* Osborn (S. W. United States and Mexico).
Spilogale interrupta (Spotted Skunk).
(M) *Trichodectes mephitidis* Osborn (Iowa).
Spilogale phenax.
(M) *Trichodectes mephitidis* Osborn (California).
Weasel.
(M) *Trichodectes retusus* Nitzsch (Iowa).
Mink.
(M) *Trichodectes retusus* Nitzsch.

Family TRICHECHIDAE.

Trichechus rosmarus.
(A) *Antarctophthirus trichechi* (Boh.) (Davis Straits, Frobisher Bay).
Pacific Walrus.
(A) *Antarctophthirus trichechi* (Boh.) (Northeast of Siberia).

Family PHOCIDAE.

Phoca groenlandica.
(A) *Echinophthirus groenlandicus* Becker (Greenland).
(A) *Echinophthirus phocae* Lucas.
Phoca vitulina.
(A) *Echinophthirus phocae* Lucas.
Harbor Seal.
(A) *Echinophthirus setosus* (=*phocae*) Lucas (Aquarium, N. Y.).
Seal.
(A) *Antarctophthirus monachus* Kellogg & Ferris.

Order RODENTIA.

Family SCIURIDAE.

Sciurus cinereus.
(A) *Linognathoides montanus* (Osborn) (Colorado).
Sciurus cinereus var. *ludovicianus.*
(A) *Neohaematopinus antennatus* (Osborn) (Iowa).
Sciurus douglasi (Douglas Squirrel).
(A) *Neohaematopinus antennatus* (Osborn) (California).
(A) *Hoplopleura arboricola* Kellogg & Ferris (California).
Sciurus griseus.
(A) *Neohaematopinus antennatus* (Osborn) (California).
Hoplopleura arboricola Kellogg & Ferris (California).
Sciurus fossor nigripes.
(A) *Neohaematopinus antennatus* (Osborn) (California).
Western Gray Squirrel.
(A) *Enderleinellus longiceps* Kellogg & Ferris (Nebraska).
(A) *Neohaematopinus antennatus* (Osborn) (Nebraska).
Spermophilus columbianus = *Citellus columbianus.*
(A) *Linognathoides montanus* (Osborn) (Washington).
Citellus beecheyi douglasi.
(A) *Linognathoides montanus* (Osborn) (California).
(A) *Enderleinellus osborni* Kellogg & Ferris (California).

Spermophilus franklini = *Citellus franklini.*
(A) ***Enderleinellus suturalis*** (Osborn) (Iowa).
Spermophilus tridecemlineatus = *Citellus tridecemlineatus.*
(A) ***Enderleinellus suturalis*** (Osborn) (Iowa).
Callospermophilus chrysodeirus trinitatus.
(A) ***Enderleinellus suturalis*** var. ***occidentalis*** Kellogg & Ferris (California).
"Rock Squirrel."
(A) ***Linognathoides montanus*** (Osborn) (Colorado).
Citellus barrowensis (?)
(A) ***Linognathoides montanus*** (Osborn) (Pt. Barrow, Alaska).
Spermophilus sp. = *Citellus mexicanus (?).*
(A) ***Linognathoides montanus*** (Osborn) (Guanajuato, Mexico).
Arctomys sp. (Marmot).
(A) ***Linognathoides montanus*** (Osborn) (Oregon).
Tamias striatus.
(A) ***Hoplopleura (?) erratica*** (Osborn) (Iowa).
Sciuropterus volucella (Flying Squirrel).
(A) ***Neohaematopinus sciuropteri*** (Osborn) (Iowa).
(A) ***Hoplopleura trispinosa*** Kellogg & Ferris (Maryland).
Sciuropterus sp.
(A) ***Neohaematopinus sciuropteri*** (Osborn) (California).
(A) ***Hoplopleura trispinosa*** Kellogg & Ferris (California).
Eutamias hindsi (Chipmunk).
(A) ***Hoplopleura arboricola*** Kellogg & Ferris (California).
(A) ***Neohaematopinus pacificus*** Kellogg & Ferris (California).
Eutamias townsendi ocrogenys.
(A) ***Hoplopleura arboricola*** Kellogg & Ferris (California).
(A) ***Neohaematopinus pacificus*** Kellogg & Ferris (California).

Family MURIDAE.

Epimys norvegicus (Domestic Rat).
(A) ***Polyplax spinulosa*** (Burm.) (California).
Microtus californicus (Meadow Mouse).
(A) ***Polyplax spinulosa*** (Burm.) (California).
(A) ***Hoplopleura acanthopus*** var. ***americanus*** (California).
Microtus mordax.
(A) ***Polyplax spinulosa*** (Burm.) (California; Iowa).
Arvicola sp. = *Microtus* sp.
(A) ***Hoplopleura acanthopus*** var. ***americanus*** (Iowa).

Arvicola sp. = *Microtus* sp.
(A) *Hoplopleura (?) erratica* (Osborn).
Phenacomys sp.
(A) *Polyplax spinulosa* (Burm.) (California).
Hesperomys leucopus = *Peromyscus leucopus.*
(A) *Hoplopleura hesperomydis* (Osborn) (Iowa).
Peromyscus maniculatus rubidus (California).
(A) *Polyplax auricularis* Kellogg & Ferris.
(A) *Hoplopleura hesperomydis* (Osborn) (California).
Peromyscus sitchensis prevostensis (Alaska).
(A) *Polyplax auricularis* Kellogg & Ferris.
Neotoma cinerea occidentalis (Wood Rat).
(A) *Linognathoides inornatus* Kellogg & Ferris (California).

Family CASTORIDAE.

Castor castoris (Beaver).
(M) *Trichodectes castoris* (Osborn).

Family GEOMYIDAE.

Geomys bursarius (Pocket Gopher).
(A) *Haematopinoides squamosus* Osborn (Iowa).
(M) *Trichodectes geomydis* Osborn (Iowa).
Thomomys bottae (Pocket Gopher).
(M) *Trichodectes geomydis* Osborn (California).
Thomomys sp.
(M) *Trichodectes geomydis* Osborn (California).

Family HETEROMYIDAE.

Perognathus sp. (Spiny Haired Pocket Mouse).
(M) *Trichodectes geomydis* Osborn (Baja California).
Dipodomys merriami (Pocket Rat).
(M) *Trichodectes geomydis* Osborn (Arizona).
Dipodomys californicus.
(A) *Fahrenholzia pinnata* Kellogg & Ferris.

Family CAVIIDAE.

Cavia cobaya (Guinea-pig).
(M) *Gliricola gracilis* (Nitzsch).
(M) *Gyropus ovalis* Giebel.

Family CERCOLABIDAE.

Cercolabes mexicanus.
- (M) *Trichodectes mexicanus* Rudow (Mexico).
- (M) *Trichodectes coendu* Stobbe (Zool. Mus. Berlin).

Erethizon epixanthum (Porcupine).
- (M) *Trichodectes setosus* Giebel (California).

Erethizon dorsatum.
- (M) *Trichodectes setosus* Giebel (Nebraska).

Family LEPORIDAE.

Lepus campestris (Prairie Hare).
- (A) *Haemodipsus ventricosus* (Denny).

Lepus californicus.
- (A) *Haemodipsus ventricosus* (Denny).

Order INSECTIVORA.

Family TALPIDAE.

Scalops argentatus = *Scalopus acquaticus* (Mole).
- (A) *Euhaematopinus abnormis* Osborn (Iowa).

Order PRIMATES.

Family HOMINIDAE.

Homo sapiens.
- (A) *Pediculus corporis* De Geer.
- (A) *Pediculus capitis* De Geer.
- (A) *Phthirus pubis* Linné.

From

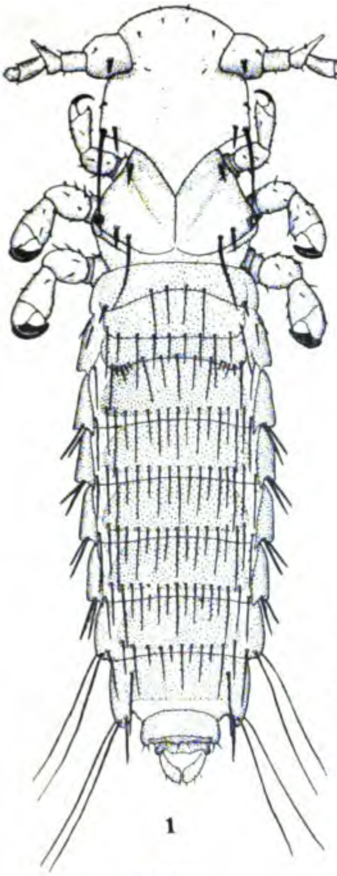
HOST UNKNOWN.

- (M) *Trichodectes painei* Kellogg & Nakayama, Psyche, vol. 21, pp. 90-92, fig. 1, (1914).

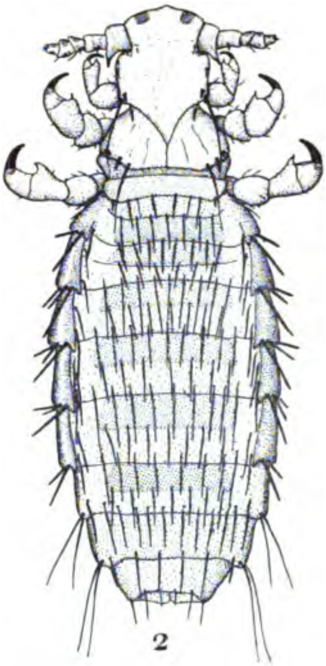
EXPLANATION OF PLATES, AND PLATES

PLATE I.

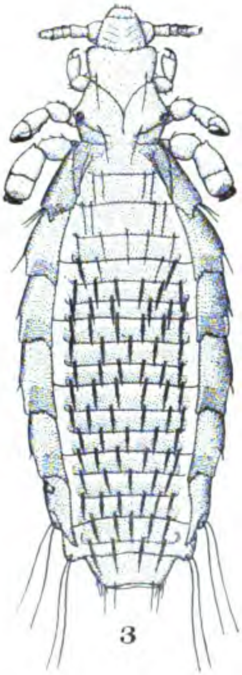
Fig. 1. Male of *Neohaematopinus sciuropteri* (Osborn).
Fig. 2. Female of *Neohaematopinus pacificus* n. sp.
Fig. 3. Female of *Hoplopleura hesperomydis* (Osborn).
Fig. 4. Female of *Polyplax auricularis* n. sp.
Fig. 5. Female of *Polyplax spinulosa* (Burm.).



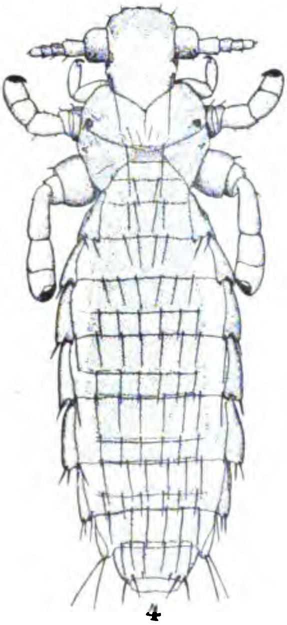
1



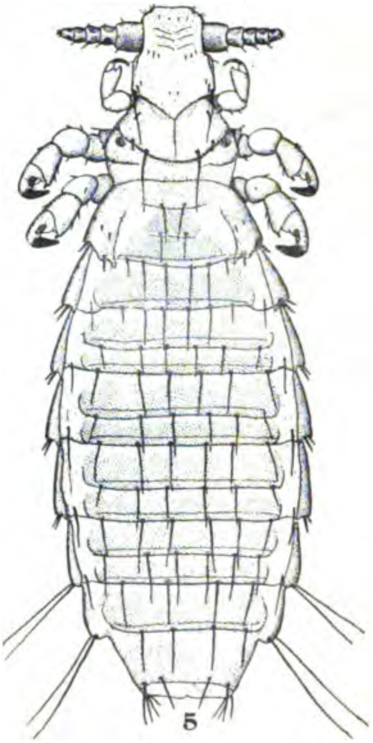
2



3



4



5

PLATE II.

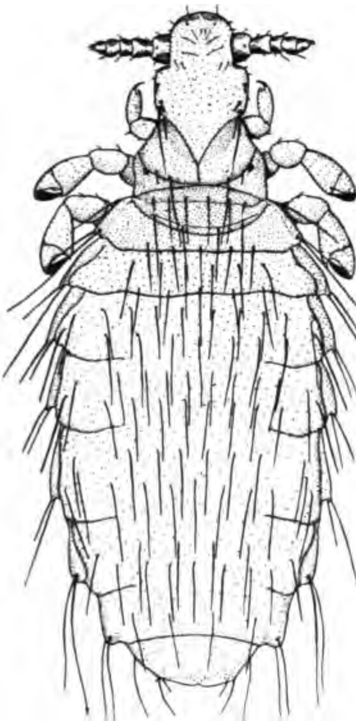
Fig. 1. Female of *Linognathoides inornatus* n. sp.

Fig. 2. Female of *Haemodipsus ventricosus* (Denny).

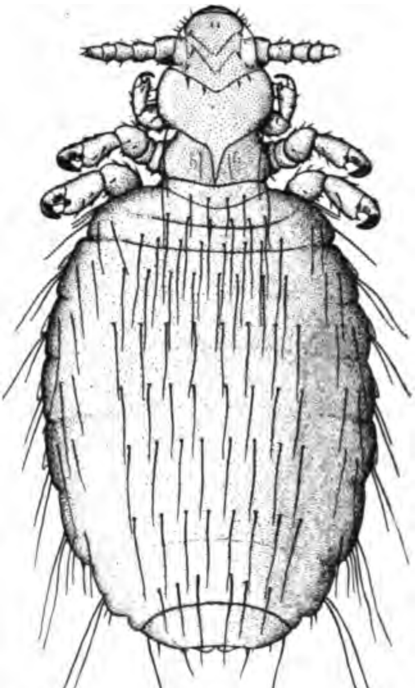
Fig. 3. Female of *Enderleinellus suturalis* (Osborn) var. *occidentalis* n. var.

Fig. 4. Female of *Haemodipsus parvus* n. sp.

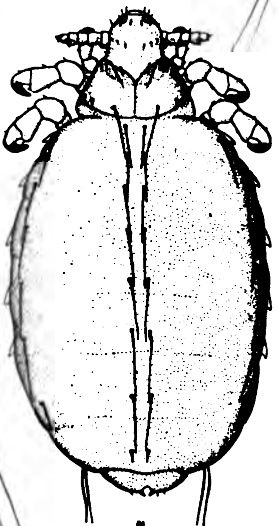
Fig. 5. Female of *Enderleinellus longiceps* n. sp.



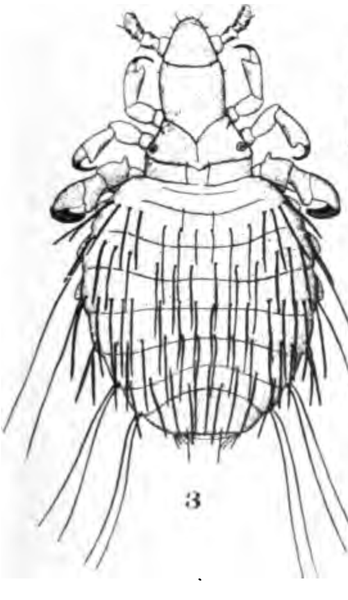
1



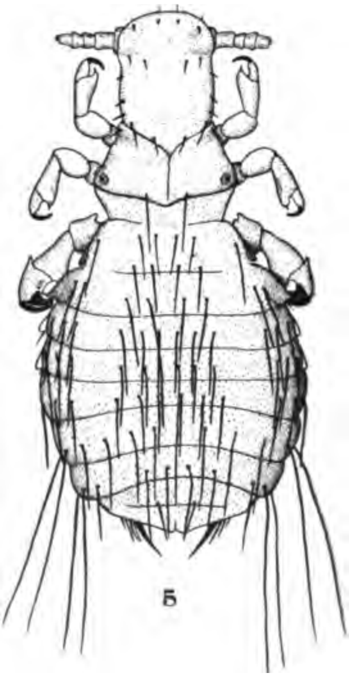
2



4



3



5

PLATE VIII.

Fig. 1. Female of *Trichodectes geomydis* Osborn, from *Thomomys bottae laticeps.*

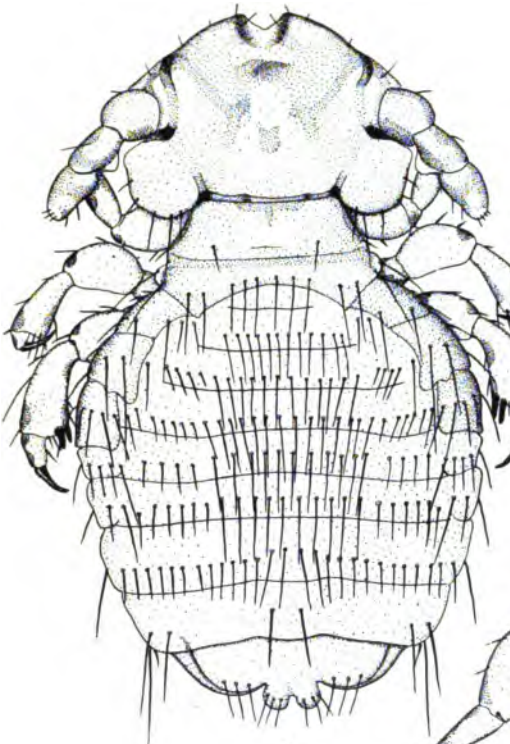
Fig. 2. Head of female of *Trichodectes mephitidis* Osborn, from *Putorius xanthogenes.*

Fig. 3. Head of male of *Trichodectes geomydis* Osborn, from *Thomomys bottae laticeps.*

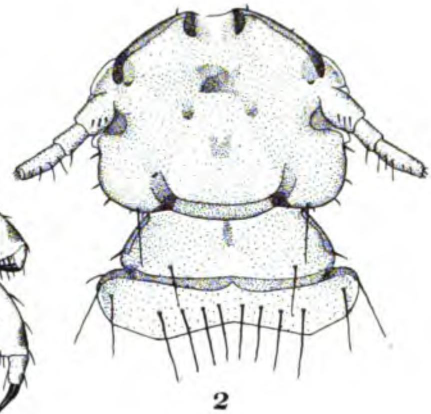
Fig. 4. Genitalia of male of *Trichodectes mephitidis* Osborn, from *Mephitis macrura.*

Fig. 5. Head of male of *Trichodectes mephitidis* Osborn, from *Putorius xanthogenes.*

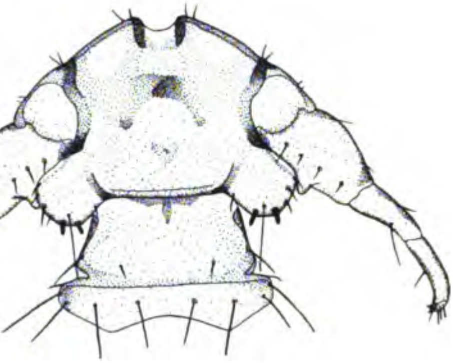
Fig. 6. Genitalia of male of *Trichodectes geomydis* Osborn, from *Thomomys bottae laticeps.*



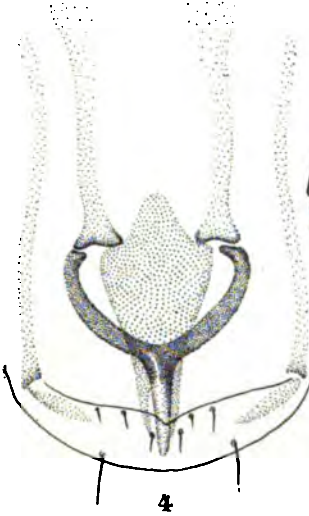
1



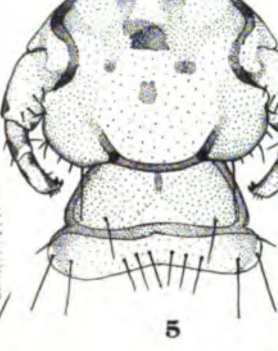
2



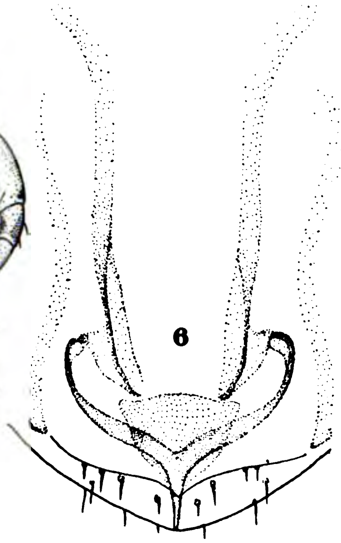
3



4



5



6

maner Latyn corrupt,'[7] who speaks of the fashionable charms of lisping before Hamlet,[8] that Chaucer recognized the 'grete diversitee in Englishe and in writyng of our tongue,'[9] translates Horace's famous passage on the words like leaves, and chronicles sorrowfully the 'scarcite' of rimes in English—when he had to translate Oton de Granson.[10]

It is towards the end of the fifteenth century that we find an editor engaged in carefully comparing English manuscripts for what we might call the first critical edition of a native author: this is Caxton, and the edition is the second one of the *Canterbury Tales*, in which he "endevoyred to correct the text that it bee made according unto his owen making, for to satisfy the auctour."

It was the love of Chaucer, then, which produced the first English textual critic, and this fact is important for the following centuries. It is Chaucer's text, and the endeavor to keep it intelligible and accessible, which ultimately leads to a revival of Middle English studies.

When we approach the sixteenth century we find the interest in the study of English language and literature alive and active in a number of different fields.

First of all, it is the antiquarian, patriotic, and historical interest in English antiquities which inspires John Leland to collect materials for a chronological work on English writers.[11] Leland's work on these was to be only one part of a greater work on English antiquities, geographical and historical; it was never finished, and his

'supellex
Ingens, aurea, nobilis, venusta
Qua totus studeo Britanniarum
Vero reddere gloriam nitori'—[12]

---

[7] MoL. v. 519 (cf. 731); cf. Wycl., loc. cit.: the comoun peeple of Italie spekith Latyn corrupt, as trewe men seyn, that have ben in Italie.

[8] Cf. Anglia, N. F., XII, 471.

[9] Troil. 5, 1793; the charming transformation of Horace's words, ib. 2, 21, do not apply to our point.

[10] Compl. Venus, 80; the other references to 'his' English scarcely apply: MoL, Prol. 49; Duch. 898.

[11] The four books into which he intended to divide the work were to cover the periods: I, from the Druids to the Coming of Augustine; II, from Augustine to the Normans; III, from the Normans to Henry VII; IV, the time of Henry VIII; cf. The Laboryouse Journey in Flügel's Lesebuch I, 278-9. The materials for his Commentarii de Scriptoribus Britannicis, as they were edited by Ant. Hall, Oxford, 1709, come to an end with the fifteenth century. The Chaucer note transl. by Lounsbury, I, 133 ff.

[12] Ad Thomam Cranmerum, in Principum, &c., Encomia, ed. 1589, p. 90 (Collectanea 5, 149; Flügel's Lesebuch I, 514).

of which he sings so charmingly, proudly, and sadly, fell after his tragic end into the hands of more or less scrupulous executors, later into the possession of moth and mould, and was not made accessible before the beginning of the eighteenth century.[13]

It would be unjust to severely criticise these collections, which as they are seem a rather large but uncritical accumulation of facts and fiction,—the raw material from which the critical hand would have selected the valuable from the slight.

Bale utilized Leland's collections for his great storehouse, the '*Catalogus,*'[14] and seasoned, in the printed editions, his numberless biographies with the bitter salt of protestant bigotry. His biographies and bibliographies represent the crude beginning of English literary history; they are chronologically arranged, and become valuable when he reaches the period of the Reformation. There is no connection given between the writers, no literary movements traced, any more than in Holinshed's work, who is his follower and might be called the first literary historian in the vernacular.[15-16]

With Leland might be grouped those earlier patriotic printers of Chaucer and Gower, Thynne, Berthelot, and Tooke, to whom the old 'vulgar' became the object of interest and quite careful study; they tried to explain the forgotten 'idioms' and to re-establish the metre, generally by some easy trick of a verbal change.

Another source of interest in the literary treasures of the past was the theological one, an interest to which we owe the first revival of Anglo-Saxon studies. The fact that their Anglo-Saxon forefathers had possessed the Bible in their own language, known to Wycliff, became again a leading argument of the early reformers, such as Tyndal and Cranmer; Langland's poem was re-edited in 1550 for theological party-purposes, and Chaucer himself became a model protestant under the treatment of Foxe the martyrologist, "a man who had seen into religion."

---

[13] On the sad history of the Leland MSS. cf. the Lives of John Leland, Tho. Hearne, and A. a Wood (by Warton and Huddesford), Oxford, 1772; I, 50 ff.

[14] Ed. 1548, in 4°, has the title: Illustrivm | Maioris Britanniae | Scriptorvm . . . Summarium; the second edition, in folio, published in 1557: Scriptorvm Il | lustriu maioris Brytannie, quam | nunc Angliam & Scotiam uocant: Ca| talogus, &c [Basileae, Apud Ioannem Oporinum, containing Centuriae I to IX; Centuriae X to XIV appeared ib. 1559].

[15] H., ed. 1586, gives these brief literary accounts of "learned men," "writers" (3, 541; 710) at the end of the different reigns; he 'knits up,' to use the phrase from p. 1589, "the seuerall reigne of euerie seuerall King with a generalitie of the seuerall writers in that princes reign"; he begins with Stephen, 3, 64, and quotes the names generally from Bale, occasionally from Leland; cf. 116; 156; 196; 276; 317; 342; 413; 508; 541 (on Chaucer, from Bale and Leland); 584; 662; 710; 761; 797; 977; 1087; 1168; for Elizabeth's reign, Fr. Thynne, unfortunately, does not give the usual list, but a 'Catalog of all such as haue purposelie in seuerall histories of this realme . . . written of England and English Matter,' p. 1589 (cf. Thynne's Animaduersions, ed. Furnivall, lxxxix); Edmund Molineux contributed the interesting account of the Sidneys, containing the earliest allusion to the Arcadia, immediately after Sir Philip's death, fol. 1554.

[16] The revised portion of Dr. Flügel's MS. ends at this point.

Anglo-Saxon christianity became an object of interest,—not only its Bible but its dogmatical attitude towards the Eucharist, towards the marriage of priests, etc. The Pre-Augustinian Church seemed to lead the way in its hostility to Augustine's *Roman* doctrines; Archbishop Parker, 1504-75, became the center of Anglo-Saxon studies, and kept in his own house "of them which do well understand Anglo-Saxon books" (1566); his son learned Anglo-Saxon; Joscelyn, his secretary from 1558 on, compiled, as Noel did likewise in 1567, an Anglo-Saxon dictionary; he quoted Anglo-Saxon in 1562; and others edited the earliest work printed in Anglo-Saxon letters (Aelfric's *Easter Sermon,* 1566), followed by the most pretentious Anglo-Saxon publication of the sixteenth century, the *Gospels,* edited by John Fox, 1571.

The antiquarian names of these early Anglo-Saxon scholars and their work have to us an almost romantic charm, and we shouldn't like to hunt for the lower motives of them: for instance, Lawrence Nowel, and Lambarde, the editor of the Laws in 1568.

The continent of Europe did very little during the sixteenth century that might figure in a history of the English language. The conversation books do not belong here; they were translated from continental sources by Englishmen, and their object was the teaching of French.

Gesner the Polyhistor mentions in his *Mithridates,* 1555, the corruption of the English language through foreign words; he gives even samples of Anglo-Saxon words from a MS. of Bede, words which were omitted from the older editions of Bede's works after 1473. He precedes in this respect the first reproduction in type of Anglo-Saxon words in England, but apart from this slight honor, his remarks on the English language are of no original value. The English protestant refugees, scattered all over Germany during the Marian persecutions, had apparently introduced their German friends to a question which was then deeply agitating the hearts of the English patriots: the question of the admixture of foreign words with the native stock.

This popular, patriotic question produced one interesting philological result: it led to the historical study of the origin and development of the

English tongue as we have it in W. Harrison's chapter on the language of England, 1586, G. Puttenham's *Books of the Originals of the English Tongue*, before 1589, Camden's *Remains*, 1605, and Verstegan's *Restitution*.

Of equal interest with these first attempts at 'Histories of the Language' is the first detailed critical review of an English book (unique in its kind), Thynne's animadversions, 1599, on Speght's edition of Chaucer, 1598, an edition which did not quite tally with Thynne's ideal of having a Chaucer "with a Comment in his tongue as the Italians have Petrarke," but which is otherwise a good specimen of an early edition. The text is corrupt (as Thynne shows very neatly), although it claims to be collated, and the few grammatical explanations are an index of the low ebb of philological studies; but the glossary is very full and intelligent, and the biography excellent. The whole is charmingly introduced by Francis Beaumont of Godescote, the namesake of the dramatist.

A practical result of these Chaucer studies was the resuscitation of the old language as a living literary tongue, as in Spenser's unsuccessful but certainly interesting attempt.

The Elizabethan age witnessed, further, the earliest movement for an orthographical reform, headed by Sir Thomas Smith, 1568, by Hart, and Bullokar; but the English language did not yet become the object of grammatical treatment: word-accent and sentence-accent are spoken of by Bacon, and a philosophical grammar is one of his desiderata, but what he calls the litteraria grammatica has to wait for Gil, 1619, and Ben Jonson (about 1620).

Since the eighth century English lexicography had had only one aim—to assist in the understanding of a foreign author; the foreign idiom generally leads, and often the words are arranged in groups of kindred senses. This latter arrangement is discontinued after Withal's *Short Dictionary*, 1556, and the meager lists of the *Promptorium*, the *Summa*, give place to Elyot's great work in 1538, often edited in the course of the sixteenth century and easily leading such school books as Baret's *Aluearie*, 1574, and *Quadruple*, 1581, and Veron's *Dictionary*, 1575 († 1563).

French dictionaries follow the Latin ones; Palsgrave's great word-lists yield a wonderful source of colloquial English of the Early Tudor Age, 1530. Salisbury's *Welsh Dictionary* appears in 1547, and Thomas's Italian grammar with a dictionary in 1550; later in the century we have Percyvale's *Bibliotheca Hispanica*, 1591, Florio's *World of Wordes*, 1599, and Cotgrave's great storehouse of Elizabethan phraseology. But the aim of all these dictionaries is to illustrate a foreign idiom,—they are not English dictionaries.

In the Elizabethan age we have further to mention some timid beginnings of literary criticism, contained in the allusions to the English authors in the writings of 'critics,' the lists of Meres, the epigrammatic characterizations of Daniel, etc. Scotland is not behind: we might mention the patriotic outburst of the author of the *Complaint of Scotland*, Buchanan's *De Scriptoribus Scoticis*, 1595-1652, the early reprints of Wallace, 1574, Thomas the Rhymer, 1603, Barbour, 1620, and others.

But all these movements of the sixteenth century are the merest rudimentary beginnings, and the seventeenth century follows like the dawn after the night; an age comes in which we find the first great names in the Historical Science. It is the age of Selden, 1584-1654, Spelman, 1564-1641, Somner, 1598-1669, Dugdale, 1605-86, Skinner, 1623-67, Junius, 1589-1677, Wallis, and Hickes.

Junius is the best known of these, and indeed the most eminent scholar and man of this little group, his work influencing and inspiring scholars for one hundred and fifty years after his death. His editions of William, Caedmon, Ulphilas, his enormous *Glossarium Quinque Linguarum* in nine volumes, at which he used to work on so many desks to his ninetieth year, are well known; but not sufficiently noticed are his services to Middle English studies, the results of which are partly given in his *Etymological Dictionary*, and partly still buried in his Chaucer MSS. at Oxford. He is also to be mentioned as the first philological inquirer into the Scottish Dialect.

Sir Henry Spelman marks an epoch in Anglo-Saxon antiquarian studies; his *Archaeologus*, 1626, is the first Anglo-Saxon glossary ever published of terms belonging to the legal antiquities, and it is admirable and useful for our own time.

With his *'Councils,'* commenced when "he was aged and almost blind," he practically inaugurated for England a new historical study. His edition of laws 'from William to Henry III' has remained the only one to our own time; his foundation of a "lecture at Cambridge, of domestick antiquities touching our church, and reviving the Saxon tongue" (1638), was the first academic recognition of Anglo-Saxon.

Stephen Skinner is least appraised and appreciated of all these men; the history of Germanic philology treats him with utter silence, and when he is mentioned at all, his work is mentioned as the source of Johnson's wrong etymologies and his ghost is still seen in the earlier editions of Webster.

He was a physician by his profession, one who did not enjoy the smell of the 'matuls' all the time, and, as he tells us humorously, instead of seeking relaxation in dicing and drinking, he condescended from his medical altitude (descendere dignatus sum) and took to etymologizing. He thinks few things can better prepare a physician for a 'prognosis' than etymology, because there is a peculiar link of affinity between the two, practical medicine not being based on demonstration but on conjecture alone,—and what else is etymology but a heap of splendid conjectures? Utrobique divinamus, etc. With a strange mixture of humor and seriousness he describes that queer creature the philologist (criticus), who despises the obvious things (obvia quaeque) et nihil probat nisi in quo ipse desudaverit, who like a mole digs with his snout in the ground, et vocabula multis iam seculis emortua suis sepulcris effodit. These things he uses as his sweetmeats, their rust and mould for frankincense, despising all the spices of India, Musck, Ambra, Benzoin. He would prefer to hear the hoarse talk of the Osci, Volsci, and Sabini to an oration of Cicero in the Senate, and no dinner-party would be more glorious to him than the one exhibiting the Persian of Aristophanes and the Poenus of Plautus. As the juggler throws his balls, so he enjoys throwing about the letters; those which you saw just now—have disappeared, but they reappear multiplied; and those letters which you thought you could lay your fingers on, are gone, and others substituted so quickly that your eyes cannot follow him. As the sailor can steer his ship as long as there is any wind blowing at all, so will our illustrious sophist arrive at some etymology as long as he can get the support of any one of the decem elementa, while all the others are transformed by a more than Circean skill and drawn into his service by hook and by crook (per fas nefas). And as soon as the rain has produced a pool on the dust, the summer sun will produce in it the croaking frogs. Is he not a most skilful artifex who can carve a Mercury out of any wood? His sense of humor is exemplified by his motto from Quintilian, and crops up here and there when he speaks of the bellum implacabile which the consonants seem to wage one with the other in certain languages. But I am not giving a history of English humor, and ought to return to his services to English etymology. They consist in the establishing of what he calls an Etymological Canon[17] of the different well arranged Affectiones Literarum, and an excellent table of sound changes in English (transmutationes seu metaplasmi literarum). It is here that we find equations which are perfectly sound, it is here that we find for the first time a systematic and full arrangement of such facts.

---

[17] The idea of a law was ridiculed by M. Casaubonus and entirely absent from Junius' work.

It is in his *Prolegomena Etymologica* that we find equations established of 'cognate letters which interchange': B, V; D, T; S, T; B, F. Quite important are his remarks, earliest in point of time, and true to our own time, on word-history, and changes of meaning; he established even a Semasiological Canon. Equally good are his remarks on popular etymology, with a few examples aptly chosen. He is a patriot, and in that chapter on the history of foreign words in English he sides with the Saxonists of the sixteenth century: it is an absurda kakozelia which has allowed so many old and elegant and emphatic words to fall into disuse. He is not in favor of far-fetched etymologies from Persian and Hebrew.

From the timid beginnings of orthographic reform in the sixteenth century a movement had started in favor of phonetic writing (Gill's *Logonomia,* 1621, Butler's *Grammar,* 1634); but a truly new start was taken by John Wallis, the mathematician, who produced in 1653 the first work on the physiological genesis of the English sounds (following sixty-seven years after Mathiæ had created this new discipline in 1586, unknown to Wallis). Wallis's study of articulate sound is epoch-making, as much so as Bishop Wilkins' *Essay towards a Real Character, And a Philosophical Language,* 1668, which became the foundation of phonography (and is well known through Techmer's reprint). The first careful observer of linguistic phenomena as represented in English, Wallis is followed by William Holder, *Elements of Speech,* 1669, and it is interesting to note the practical and successful application of their phonological discoveries to the teaching of the deaf and dumb.

Before we can touch the fourth great master of the seventeenth century, George Hickes, we should at least describe a number of brooks which at later periods were destined to become respectable streams.

The earliest works in English lexicography proper are to be chronicled from the beginning of the seventeenth century,—books devoted to the explanation of "hard words." The English language was proving a strange tongue even for a good "Hebrician Grecian and Latinist who might be to seek in the Italian, French or Spanish"; it was a time when a new "world of words" was brought home by every traveler, when many made "it their study to be learned in our own language," and so "for the more-knowing Women, and less-learned Men, or indeed for all such of the illiterate who can but find in an Alphabet the word they understand not," 'Tables Alphabeticall of Hard Words' became necessary. The earliest of these was compiled by Robert Cowdry, 1604, followed by Bullokar's *An English Expositor,* 1616, Cockeram's *Dictionary,* 1623, and by the most ambitious one, Blount's *Glossographia,* 1656, which included even Saxon words "growing every day more obsolete than the other," and having a feature new and marking an innovation of great importance: Blount adds, sparingly to be sure, quotations: "To many of which [words] I have added the Authors names, that I might not be thought the innovator of them." Blount has good etymologies; he does not become "the advocate for the use of such words" as he treats (cf. Skinner's assault on Minshew); he merely chronicles them, letting "every ones genius" be "their own Dictator."

At the side of these lexicographical works should at least be mentioned the attempts to prepare a pragmatical grammar before Wallis: Charles Butler, 1633; Gataker's *De Dipthongis Bivocalibus,* 1646; Owen Price's *English Orthographie,* 1668; Thomas's *Milk for Children,* 1654; Cooper's *Grammatica,* 1685; and the most interesting one, published 1640 (two years after his death), *"The English Grammar* made by Ben Johnson. For the benefit of all strangers, out of his observation of the English language now spoken and in use." The Preface states his purpose: "the profit of Grammar is great to Strangers who are to live in communion and commerce with us, and it is honourable to ourselves, for by it we communicate all our labours, studies, profits, without an interpreter. We free our language from the opinion of rudeness and barbarism, wherewith it is mistaken to be diseased: we shew the copy of it, and matchableness with other tongues; we ripen the wits of our own children and youth sooner by it and advance their knowledge."

In grammar not so much the invention as the disposition is to be commended. Sense and experience, observation, are introduced in his raw draft of a preface as the important correctives. J. C. Scaliger's ominous word presides over it: Grammatici unus finis est recte loqui (!). An elaborate account of the sounds of 'letters' begins, full of quotations from Scaliger and Smith, parallels from French, Italian, Hebrew, etc. The part dealing with 'Etymology' (Inflections, and the Parts of Speech, called here [by that name]) is followed by a sketch of Syntax, in which examples are quoted, taken from Chaucer, Gower, Sir Thomas More, etc., a new feature in English grammars.

The opposition to the 'opinion' of 'rudeness and barbarism' cast by some on the English language and repudiated by English writers from Sir Thomas More's and Ascham's time on, led to an interesting movement in the seventeenth century, as far as I know never noticed by the histories of English literature: a movement in favor of following the example set by Richelieu's foundation of the Academie Francaise, 1635. If the purity of the language, its grammar, its orthography, needed looking after, why not do this officially? The "new Academy of wits call'd l'Academie de beaux esprits which the late Cardinal de Richelieu founded in Paris, is now in hand to reform the French language," writes Howell in 1656 to justify his orthographical 'weeding' out of superfluous letters, and perhaps in the hope of stimulating the foundation of a similar institution in England,—Howell who in 1630 despaired of calling English a regular language. Dryden hopes, 1664, for such an 'Academy' to keep foreign words on the other side of the channel, and the threatening danger of an English Academy reaches its height in what Johnson calls Swift's petty treatise, the *Proposal for Correcting, Improving and Enlarging, and Ascertaining the English Tongue,*[18] 1712, and in his desire for an Academy "to correct and fix the English language," a society or Academy "to provide that no word which it shall give a sanction to be afterwards antiquated," because the English language, "so defective in grammar," was to be "settled." Perhaps the climax of Swift's statements is contained in the words: "I see no absolute necessity why any language should be perpetually changing," words which we should condemn in all their absurdity if the ghost of Dr. Bentley would not appear and refer us to his own words.[19] It required the services of a new St. George to kill these follies and dangers, and Dr. Johnson arose as the champion of English liberty, and as a man with an insight into the problems of the history of language. He banished at least for one hundred years the dreams of "regulating the language."

The discipline of English literary history was long in forming: we find Pits at the beginning of the seventeenth century, 1619, Fuller in the middle, and the *Theatrum* of Phillipps at the end of the century, 1675, followed by Winstanley, Langbaine, Blount: catalogues of "characters and censures" in spite of Bacon's warning, perhaps grouped in parallels à la Plutarch which never fit, and seasoned with 'opiniones aliorum.'

Far above all these towers the figure of Hickes, whose philological career began with his *Anglo-Saxon Grammar,* 1689 (ten years before Bentley's *Dissertation!*), and whose chief title to immortality is his *Thesaurus,* published 1703-05 (seven years before Bentley's *Horace*).

---

[18] This follows Addison's Spect. No. 135, August 4, 1711. The Spectator despairs of a rule for [settling "all controversies between grammar and idiom" otherwise than by an academy].

[19] [See Jebb's life of Bentley, p. 175.]

Hickes' services to Germanic and Anglo-Saxon philology are well known; scarcely noticed are his services to Middle English studies.

He is such an interesting figure, as scholar and man, that we could easily and profitably expand this brief account into a long lecture. He is the earliest author of a scientific Anglo-Saxon grammar based on the sources, with full and careful quotations from these, and with an intelligent arrangement of the material,—a book which contains glimpses of the recognition of facts which were further developed not until Grimm's day. He demands a knowledge of all the 'northern' languages as a necessity for the Anglo-Saxon scholar,—a comparative study of Germanic languages as we should call it. He demands a knowledge of Anglo-Saxon for the historian and for the student of English law; one of his desiderata is a new edition of Anglo-Saxon laws on the basis of a new collation of all the MSS. He collects dialect words, and recognizes the importance of the study of dialects for the philologist. He demands an historical English grammar based on a knowledge of the Ursprachen (linguarum matricum) and following the various changes down to the modern times (he calls this grammar ratiocinativa et si dicam scientifica).

He recognized the affinity of the Indo-Germanic languages not only in vocabulary, but in inflection, syntax, and composition of words, and prays to God that somebody would come to write now de communitate cum aliis antiquis linguis, de communitatis illius causis. This connects him with Meric Casaubon, whose comparison of Greek and Anglo-Saxon, 1650, deserves to be mentioned. He is eminent as a commentator of Anglo-Saxon texts, and as giving for the first time a clear distinction of the periods of the English language (his periods for good and bad have been quoted until recent times). He is also eminent as one of the earliest scientific palaeographers of England, who transferred Mabillon's method to English soil. He represents the beginning of historical English grammar as a systematic discipline, a field in which he did not have a successor until Grimm. He abounds in valuable remarks on a great number of subjects, which prove him not only a scholar and thinker, but a man of fine taste. I may mention here his attitude towards Anglo-Saxon and Middle English metrics, of which he is the earliest scholar,[20] towards alliteration, towards the sound-mutation of Transition English, and towards the vocabulary of this period, as well as his examples of Lautverschiebung, his fine æsthetical remarks on Anglo-Saxon style and poetics, on historical syntax, on Anglo-Saxon charters, his clear recognition of Scandinavian loan-words, of French loan-words introduced at different periods, and his remarks on Middle English grammar. He is the center of a remarkable group of younger scholars; indeed we might call the whole age the age of Hickes. Of these younger scholars I beg leave only to give the names: Christopher Rawlinson, Edward Thwaites, William Wotton, David Wilkins, John Smith (of Cambridge and Durham), Thomas Benson, William Elstob and his sister Elizabeth Elstob (editor of Ælfric's Homily on St. Gregory, 1709, and *Rudiments of Grammar for the English-Saxon Tongue,* 1715). None of these was more remarkable than Humfrey Wanley, whose catalogue of Anglo-Saxon manuscripts (forming the third folio of Hickes's *Thesaurus,* 1705) stands not only unique in his time, but is indispensable for our own and not yet superseded.

---

[20] He is the earliest writer who directs his attention to Anglo-Saxon metrics and rhythmics, which he clearly distinguishes; his fine feeling for rhythmical beauty is a full counterbalance against his quantitative mistakes.

The work of Hickes is the beginning of, and for a long time it is the high water mark for, Anglo-Saxon studies and of scholarly work in general. For the rest of the studies no great name comparable to his can be mentioned from the first half of the eighteenth century; we must wait for the second half, and the age of Dr. Johnson, Warton, and Tyrwhitt, the period of the first scholarly dictionary of the English language, the first critical edition of a Middle English poet, and the first classical history of English literature. But before we come to these great men, a number of smaller lights have to be observed, and some other movements which, important as they are, do not lead to "epoch-making" works.

Shakespearean scholarship, from Rowe to Malone, does not even find a standard of textual criticism to be applied to Shakespeare's works: Bentley's influence is not felt on this field. Its only achievement is the recognition of the necessity of illustrating Shakespeare's idioms from the language of his contemporaries.

No *historical grammar* is written which could be placed at the side of Hickes's work in Anglo-Saxon. The grammars, if they are not "practical" (like Greenwood's and Lowth's), become "philosophical" and "universal" (like those of James Harris, Priestley, and Tooke); and only timid and dilettantish essays are made in the direction of a scholarly and conscientious solution of the problems, as with Tollet and Pegge, who advocates dialect study, has the idea of an historical dictionary of English, and suggests the historical study of English in the schools, but has not the courage to learn Anglo-Saxon and do his work thoroughly.

The *antiquarian studies,* often in connection with legal history, often topographical (as with Grose), have illustrious names, but follow the older lines (as Wilkins's *Concilia,* 1737). Sir John Fortescue Aland points out, like Hickes before him, the importance of the study of Anglo-Saxon law, and of a knowledge of Anglo-Saxon. Blackstone's concluding chapter contains the first brilliant historical account of the rise and progress of English law, and was the stimulus for Reeves; but no history of English law is yet written based on a careful philological study of the sources.

But the interest in the older literature, which grows from slight beginnings during the first years of the century (as in Urry's and Morell's work on Chaucer), increases. Many new sources are opened, new fields of work begin to be tilled. The old ballads are modernized and collected, and the old songs; the minor early poets are edited and re-edited; Scotland does not remain behind; Ruddiman leads. Allan Ramsay follows, pointing out the "natural strength of thought and simplicity of stile of our Forefathers." Historical interest induces Hearne to edit Robert of Gloucester and Robert of Brunne, and to slip in a transcript from Sheale's copy of the *Chevy Chase*. The most famous of all these collections, Percy's *Reliques,* appears in 1765,—a collection which, to be sure, takes a rather apologetic attitude toward these "pieces of great simplicity" and "merely written for the people," but which is not without philological interest. Percy selects such specimens "as either shew the gradation of our language, exhibit the progress of popular opinions, display the peculiar manners and customs of former ages, or throw light on our earlier classical poets." He thinks an apology necessary for what he regarded as too great accuracy (we think differently about it now): "The desire of being accurate has perhaps seduced [the editor] into too minute and trifling an exactness; and in pursuit of information he may have been drawn into many a petty and frivolous research." Among his helpers he mentions Farmer, with "that extensive knowledge of ancient English literature for which he is so distinguished," and Lye, "who stands at this time the first in the world for northern literature." Like the perfect amateur he was, creeping behind his friends, protesting that he has included nothing "immoral and indecent," he timidly "hopes he need not be ashamed [he the Reverend gentleman!] of having bestowed some of his idle hours on the ancient literature of our own country."

There was fortunately another man coming, who was not afraid of wasting his precious time on these "rude productions of unpolished ages": a man who came to his task as a leader of classical scholarship, who approached Middle English literature with a keen critical eye,—Thomas Tyrwhitt. He saw what was needed first, and what former editors had not realized: an exact philological knowledge and a critical method in dealing with the old texts. Tyrwhitt built on the foundation laid by Hickes, and in spite of mistakes and blunders gave the first satisfactory Middle English grammar. His editorial principles are: (1) to give the text as correct as the manuscripts would enable him to make it, to "form" it throughout from manuscripts, and to state every deviation; (2) to draw the line between the imperfections of the text as Chaucer left them, and those which have crept in since; (3) to illustrate and explain the more difficult passages by quotations from Chaucer's contemporaries. That the execution of his work remained far behind his principles must not be forgotten, but with every deduction he stands high in the annals of English philology.

Not as a philologist, but as an antiquarian, Joseph Ritson deserves a place after Tyrwhitt,—a man "bitter as gall and sharp as a razor," whose "superstitious scrupulosity" was—strangely enough—censured by Scott.

Far above him in general importance, indeed the first master of English literary history, ranks Thomas Warton, whose *History of English Poetry* is absolutely epoch-making; a mine of information, bibliographical, literary and historical; not a model of methodical precision, but a work impregnated by intellectual vigor, written in a clear and unaffected style, and most remarkable because its author never forgot that he was an historian and not a critic of literature. Warton's book was bitterly attacked by Ritson, and severely criticized by Scott, as an immense commonplace book of memoirs rather than a history; but Herder and Sulzer at once recognized its importance, and we regard it as a landmark in the history of English philology.

English lexicography of the eighteenth century grows out of the dictionaries of hard words of the seventeenth, and it becomes more ambitious. Old words begin to be included more fully, as in Kersey (1708). Nathaniel Bailey, publishing an "Universal Dictionary" (1721), wishes to include *all* words, and is the first lexicographer on English soil who marks the accent (in Germany Ludwig had preceded him). The classical age of English literature called for a standard dictionary, for which Johnson's services were secured in 1747; working with astonishing quickness, "under pressure and anxiety, in sickness and in sorrow," he produced in 1755 his great work. The new features of this immortal work are (1) the systematic insertion of quotations; and (2) the careful logical —not yet historical—determination and distinction of the "shades of meaning." We have his classical remarks on the Dictionary, full of sound observations on language, arguments against "fixing" the language, far gentler than his apodictical remarks in some famous definitions. To become a truly "faithful lexicographer" he lacked only one thing, which would have made his dictionary not only critical ("interpretative") but historical, and that was a deeper knowledge of English philology—a knowledge worthy of a successor of Hickes and Junius. He says, "I pleased myself with the prospect of . . . the obscure recesses of northern learning which I should enter and ransack, the treasures with which I expected every search into those neglected mines to reward my labours." The mines were not as neglected as he thought; and what a pity that he did not enter more deeply! as deeply, for instance, as Tyrwhitt. If he could have conquered himself, if he had put his own great personality into the service of English philology, the later development of this branch of science would have been different. But we have no right to introduce the great Might-have-been; we have to be grateful for what he gave, when, as he says, so much of his life "has been lost under the pressure of disease, much has been trifled away, and much has always been spent in provision for the day that was passing over me."

To summarize the later development of English lexicography, I should say that the dictionaries in the age after Johnson were mainly pronouncing dictionaries: what is so horribly called Orthoepy was the goddess worshiped by Perry, Sheridan, Walker, and Nares, and this utilitarian or pedagogical aim deprives them of higher scientific value, even if they are most valuable for us by giving statements as to the actual pronunciation.

Among continental works I should mention the early literary interest in English literature in France: the *Jugemens des Savans,* by Adrien Baillet, 1685; the *Mémoires* of Michel de la Roche, 1710-14; *Dissertation sur la Poésie Anglaise,* 1713; *Bibliothèque Anglaise* (15 volumes), 1717-27; *Mémoires Litéraires de la Grande Bretagne,* by La Roche and Chapelle, 1720-24; Voltaire's *Lettres,* 1733; the *Bibliothèque Britannique,* 1735; Abbé Yart's *Idée de la Poésie Anglaise,* 1749; the *Journal Britannique,* 1751. In Germany we find, after the *Bibliotheca Poetica,* 1625, Morhof's *Unterricht,* 1682, and *Polyhistor,* 1688-92; then the *Acta Eruditorum,* from 1682 to 1732, including essays and reviews dealing with English literary subjects, generally from the pen of Burkhard Mencke. Among the subjects of papers are Hickes's Grammar, Milton, Dryden, Shaftesbury, Shakespeare, and the English Language. Of the poets studying English literature we should mention Wernicke, Brockes, Bodmer, Gleim, Hagedorn, Herder, Goethe, and scores of others. We find a *Britische Bibliothek,* 1756-67; *Historische-Kritische Nachrichten einiger*

Merkwürdigen Englischen Dichter, 1780; Reuss's *Lexicon der Lebendigen Schriftsteller in Gross Britannien,* 1770-1803; *Britisches Museum,* 1777-80; *Annalen,* 1780; and Sulzer's admirable bibliographical notes on the English drama, comedy, tragedy, songs, didactic poetry, the romances and fairy tales, epigrams, pastorals, satirical poetry, etc. But not one name should stand higher than that of Herder, who first among moderns has a deep insight into the heart and soul of another living people, a warm sympathy with it, and a clear grasp of its intellectual essence; who not only first inspires Germany for Ossian and Shakespeare (1773), but in his essay on the similarity between Middle English poetry and Middle German, 1777, shows an historical insight into the development of English literature and proudly asserts that the "immense treasure of the Anglo-Saxon language is ours too," and hopes for a study of this language, mentioning an early plan for an Anglo-Saxon Library in Germany, and recognizing with a sigh the absence of a Parker, a Selden, a Spelman, a Hooker, a Warton, in German philology. When he wrote this the man who was to combine all the strength of these giants was not yet born; but forty years afterwards there was given to the world the work which is to be regarded as the greatest landmark in the history of Germanic as well as English philology. I am speaking, of course, of Jacob Grimm's Grammar, published 1819. Indeed Grimm's work is so stupendous that we must divide the whole history of Germanic philology into a period before the appearance of the grammar and one after. The first period is preparatory, deals with the beginnings; the second with its manhood and maturity. The truth of this statement we find clearly shown by the development of Anglo-Saxon studies in England: the work that is done before Grimm, or after the publication of the Grammar without taking account of it (as by Bosworth, 1823), appears to us now antediluvian, nay incredible. Bosworth is a Hickes *redivivus,* but what was wonderful in 1703 is a serious step backward in 1823. His services, if we want to give a calm judgment, were historically valuable, because he helped to satisfy the demand for a more elementary grammar and a word-list; but he neither wrote a grammar nor a dictionary worthy of that name for our time, and his work is an anachronism.

More remarkable are the services of Conybeare, who published good translations from the Anglo-Saxon, and whose short life promised greater things; and a high place of honor is due to Sharon Turner, whose *History of England from the Earliest Period to the Norman Conquest* (1799-1805) was a new start in Anglo-Saxon and English historiography. It was the first Anglo-Saxon *Kulturgeschichte,* with ample quotations obtained often under the greatest difficulties; the first work in England in which at least the attempt is made to give the story of Beowulf. Mention should also be made of J. Webb (who died early, 1814), whose *Grammar of the Primitive, Intermediate, and Modern English Tongue* was never finished; and of Dr. Silver, James Ingram, and Robert Meadows White. But the two scholars who mark the greatest advance in scholarship during the first half of the century are Kemble and Thorpe. Benjamin Thorpe was the pupil of Rask, and the careful editor of Caedmon, the Laws, the Gospels, Ælfric's Homilies, and the *Diplomatarium*. John Mitchell Kemble was the grateful pupil of Maasmann, Schmeller, and Grimm,—of Grimm especially, to whom he says that he owes "all the knowledge I possess, such as it is; the founder of that school of philology which has converted etymological researches, once a chaos of accidents, into a logical and scientific system," and who he hopes (in the dedication of his *Beowulf*) "will not refuse this tribute of admiration and respect from perhaps the first Englishman who has adopted and acted upon his views." Considering the fifty years of his life, Kemble's work is astonishing: his edition of *Beowulf*, of the *Codex Vercellencis*, of *Salomon and Saturn*, not to mention his lectures on Anglo-Saxon literature, his antiquarian researches, and his collection of Anglo-Saxon documents (1839-48), which is the foundation of our present knowledge of early English institutions and customs, the great model of all such undertakings. His exact knowledge of Anglo-Saxon, his paleographic skill and critical acumen, make his work monumental; and the commentary on it, *The Saxons in England* (1849), was the undisputed masterpiece until the appearance of Stubbs's *Constitutional History* in 1873.

As successors of Kemble and Thorpe in the Anglo-Saxon field we should mention John Earle, Skeat, Toller, Richard Garnett, Hardwick, Cockayne, and Joseph Stevenson. Nor has any one been more trustworthy and solid than Henry Sweet and Arthur Napier,—the latter trained in that great school of textual accuracy of Julius Zupitza's. As the undisputed master of English phonology—and the phonology of the dialects—we should mention, besides Sweet, Alexander J. Ellis, author of the monumental work on Early English pronunciation and the phonology of English dialects (1869-89); James Murray, who gave the first model grammar of any English dialect (1873); Joseph Wright; and Edwin Guest, author of the earliest large work on English rhythms (1838) and a great number of valuable grammatical and antiquarian investigations.

An event of great importance for English philological studies was the founding of the Philological Society in 1842. Before this, in 1857, Richard C. Trench read his paper on "Some Deficiencies of our Dictionary," which led to the vast collection of material for a new English Dictionary. The earliest plans for this Dictionary were drawn by Herbert Coleridge (*Proposal,* 1859) and Frederick J. Furnivall; the work was eventually put into the safe hands of the greatest living authority on English philology, Dr. Murray, who, after years of patient toil, wise planning, and remarkable circumspection, produced the first part of this ***monumentum aere perennius*** in 1888. At the side of this greatest masterpiece of our science the other pieces of lexicographical work recede into the background, even if they represent honest work and—for their time—a high standard of excellence or usefulness: Jamison's *Etymological Dictionary of the Scottish Language* (1808), a great storehouse of quotations; Todd's Johnson (1816) and Latham's Johnson (1870); Nares's *Glossary* (1822); Charles Richardson's *New Dictionary* (1836); Wedgwood's *Etymological Dictionary* (1857); and Skeat's *Etymological Dictionary,* the best of its kind—a great storehouse of information. The necessary supplement to the Oxford Dictionary is the *English Dialect Dictionary,* based in part on the material collected by the Dialect Society (which was founded by Skeat) and edited, with great philological knowledge and technical skill, by Joseph Wright.

In the history of Middle English studies (which were profited less directly by Grimm, who had not many more texts than Tyrwhitt's Chaucer and Walter Scott's *Sir Tristrem*) a new epoch begins—not only for England—with the founding of the Early English Text Society by Dr. Furnivall in 1864. This not only gave a new impulse to these studies, but made them possible on a scientific scale. A new scholarly life begins with its publications, and the services of the moving and leading spirit of the Society, Dr. Furnivall, are not only of lasting value for philological studies but of national importance. His aim was "to bring the mass of earlier literature within the reach of the ordinary student, and to wipe away the reproach under which England had long rested, of having felt little interest in the monuments of her early life and language." To achieve this end more fully, Furnivall has crowned his work with the founding of the Chaucer Society and the publication of the great mass of Chaucer manuscripts, which alone makes a critical study of Chaucer's text possible. On the work done by Dr. Furnivall and his helpers rests the study of Middle English dialects. As master commentator, if not editor, of manuscript texts, we may mention Professor W. W. Skeat, the Tyrwhitt of the nineteenth century.

Of the men who did valuable work before the founding of the Early English Text Society, we should mention—after Walter Scott, Weber, and the earlier pioneers in this line—especially: David Laing, James Morton, R. M. White, and Sir Frederick Madden, the greatest palæographer of his day, whose editions of Layamon, of *Havelok,* and of Wycliffe's Bible (based on a careful collation of sixty-five manuscripts) are monuments not yet superseded. We should also mention the printing clubs, like the Roxburgh, the Surtees Society, the Camden Society, the Scottish Societies, and the Rolls Series. One of the most voluminous editors of Middle English and Elizabethan works was Thomas Wright, whose best editions are Robert of Gloucester and Robert of Brunne, the *Political Songs,* the Anglo-Latin poets, and the volume of Vocabularies, and whose most stimulating work was the *Reliquiae Antiquae,* published in conjunction with Halliwell, 1839-43. What a pity that his carelessness, his lack of accurate philological knowledge, and his mania for rapid bookmaking, should bring the value of his whole life's work in question!

As to the work done in the editing of Elizabethan and later texts, the central interest is grouped around Shakespeare, and the development of Shakespearean studies would easily demand more time than we can give to it. The landmarks of this vast field of English philology seem to be, after Boswell's Malone, 1820, Collier's textual work (1842-44, before he stigmatized his name and fame forever); Halliwell's Folio edition, 1853-65; Dyce's critical text, 1857; Clark and Wright's, 1863-66; the illustrative work of Douce; that of Drake; the Concordance of Mary Cowden Clarke; the photolithograph of the First Folio, by Staunton, 1866; Ingleby's and Fleay's criticism; the *Life of Shakespeare,* by Halliwell, 1874-84, the results of which may for the most part be regarded as final; and the careful bibliographical work of Sidney Lee. Other texts belonging to the period of modern English literature that mark an advance in method are Nott's Wyatt and Surrey, 1815-16, and the editions by Gifford, whose forte lies in his sharp and racy commentary. The most trustworthy editor of Elizabethan dramatists is Dyce, whose edition of Skelton is also a classic. Merely mentioning the careful reprint of Dodsley's collection of plays, by Hazlitt, and the work of the Old and the New Shakespeare Societies, we have to note particularly Hales' and Furnivall's *Percy Folio Manuscript,* Grosart's on the whole very accurate reproductions, Chappell and Rimbault's Ballads and Songs, and, last but not least, Arber's Reprints. Moreover, Arber's Transcripts of the Stationer's Register and Term Catalogues are the basis of any sound bibliographical study of the literature of the earlier epoch of modern English.

The history of English literature has not found in the nineteenth century a master who might be compared with Warton. Ellis's *Historical Sketch* (1801) is ridiculous; Wright's *Biographia* contains a valuable mass of materials, but is no history; David Irving's *Scottish Poetry* (1828-61) is a standard work only for lack of a better one. Morley's *English Writers* is a good popular work, but not critical, independent, or exhaustive. Collier's *Materials for a History of Dramatic Poetry* are far more remarkable than all these; but not one of these men reaches Warton's height, and Adolphus W. Ward's *History of English Dramatic Literature* (1875) alone can be called a classical account of this important branch of the history of literature. More popular books, school-books, or more or less subjective treatments, undertaken from the standpoint of an individual enjoyment of this or that period, or of a special love of a special poet—*causeries* generally more entertaining and less sound—do not take the place of a sound literary history; Gosse's *Eighteenth Century Literature,* Saintsbury's *Elizabethan Literature,* and the like, make the want of a comprehensive scholarly history of English literature felt only the more. But, to be sure, the field is so vast that the ordinary scholar is deterred; and every succeeding age will require a greater master to earn these laurels.

Other countries have faithfully helped, none more faithfully than Germans; and Klopstock's word still holds good (unless America shall wrest this laurel from the old country in course of time)—"Nie war gegen das Ausland ein andres Land gerecht wie du." Never were scholars ready to devote themselves more unselfishly and more seriously to the study of a foreign language or literature, and never did the quiet, serious application of methodical training yield better results. Grimm's fundamental work not only served as a basis for later work, but it also largely inspired and directed the work in historical English grammar, that branch of English philology which has kept in the foreground of study and interest during the second half of the nineteenth century, and which is regarded as the key to the scientific examination of modern English, to the beginnings of English literature, and the philological method in general. The study of Anglo-Saxon has, perhaps, the greatest number of eminent names: Leo, Bouterwek, Dieterich, Ettmüller, Ebert, Rieger, and the one man who, working under the most distressing circumstances, with an iron will, and sound knowledge of comparative Germanic grammar, prepared the texts of Anglo-Saxon poetry on which all later study of these texts is based, on which indirectly the later work in Anglo-Saxon grammar is also based, and whose Anglo-Saxon *Sprachschatz* (1861-64) is the first and only satisfactory Anglo-Saxon dictionary,—the model of a work of the kind, and not yet antiquated. Grein not only furnished the pattern for such a work, but also pointed the way to a complete dictionary, which our generation has not yet succeeded in furnishing. The later editions of the *Bibliothek,* Wülcker's continuation of Grein's scheme, are worthy of their forerunner, and the editions of Zupitza and Assmann, will not be superseded for a long time to come. The critical work of Müllenhof, ten Brink, and others, applied the method of the "higher criticism" to *Beowulf,* and even if we do not accept their results, the method of these studies remains one of the lasting achievements of Anglo-Saxon philology.

The history of Anglo-Saxon literature found an early worker in Ettmüller; its most brilliant sketch is the one by ten Brink. The host of workers in the field with a smaller output cannot be enumerated here; their safe results were critically sifted in Wülcker's *Grundriss,* which is a model, in its way, of the help which such a book can become in the hands of a master. Anglo-Saxon history found eminent representatives in Gervinus (1830), Lappenberg, and Pauli; Lappenberg's work, for the time of its publication (1834), was "the most complete, the most judicious, the most unbiased, and most profound,"—an early example of the critical historical method, and one of the finest specimens of it. The study of Anglo-Saxon law is represented worthily by Schmid (who studied with Grimm's grammar the texts he was going to edit), by Maurer, who is regarded as the founder of the discipline of the history of comparative Germanic law, and by Liebermann, whose new edition of the Laws, in course of publication, will be a κτῆμα ἐς αἰεί, combining soundness of historical scholarship with philological accuracy and a mastery of the critical method.

The stress which was laid so early on Anglo-Saxon, and the model of an historical grammar established by Grimm, resulted in the first great historical grammar, that of Koch, 1863-64, following Fiedler's still earlier but less complete attempt (1850), and in the systematic grammar of Modern English by Mätzner, who is careful in giving the historical basis in his notes. Mätzner's great merits consist in his syntactical studies, and in his services for Middle English. The Middle English section of grammar also found masters in Kluge, Morsbach, and Luick. All previous work in Anglo-Saxon grammar was absolutely superseded by Sievers's Grammar, which holds its place as containing a model treatment of inflections and phonology, and gives the basis for grammatical work in Middle English by ten Brink, Morsbach, Kaluza, and the scores of compilers of dissertations. Stratmann gave the earliest Middle English glossary on a large basis; but Mätzner's dictionary, utilizing the materials of the Early English Text Society, is the first real dictionary of Middle English,—of the greatest importance (even if Mätzner does not mention it) for English lexicography at large. The study of English—especially Middle English—syntax is worthily represented by the work of Einenkel and Kellner, that of Anglo-Saxon syntax by Nader and Wülfing; and the day is not far distant when a German will present his cousins with the first historical syntax on a large scale. English phonology was stimulated by the representative works on phonetics of Sievers, Trautmann, and Viëtor.

Middle English textual studies are flourishing, but, whether due to the largeness of the field or to the still incomplete material, the harvest has not yet been gleaned as thoroughly as in Anglo-Saxon studies. Of the grammatical and lexicographical works I have spoken; but the critical editing requires a further note. The earlier work of Stratmann and Mätzner was followed up by Mall, who in 1870 tried for the first time to edit a Middle English text through a careful investigation of the rimes, and the establishing of a pedigree of manuscripts. His work was carried on on a broader basis by Zupitza, Kölbing, and Horstmann; and ten Brink showed in his edition of Chaucer's *Prologue* and the *Compleynte to Pite* an equal mastery of this field. Zupitza and Kölbing also deserve to be mentioned as commentators; the notes on *Guy of Warwick* and the metrical romances vie with the commentaries of the old Dutch school, while the texts show the critical sagacity of Bentley.

Of all the modern writers Shakespeare has, of course, received the largest portion of critical care. Of the scores upon scores of German commentators, editors, lexicographers, and lecturers, it would be an endless task to give an adequate idea. The masterpieces of the scholarly study of the poet are the critical edition of Delius, 1854-61, the edition of *Romeo and Juliet* by Tycho Mommsen, 1859, the biography of Shakespeare by Elze, and the Lexicon by Alexander Schmidt, 1874. Among other workers in Elizabethan literature we should mention Koeppel's researches, those of Sarrazin, and Schick's investigations in Kyd. The earlier Tudor period has found an historian of its political aspects (Busch), but no Lechler has devoted his attention to the age of the Reformation either for its theology or its literature.

The history of English literature, or large sections of it, was treated by Eichorn (1796), Bouterwek (1801-10), Grässe, and Schlegel; by Ebert, whose *Essay on the Beginnings of the Drama* (1859) is a landmark in this study; by Klein, whose *Geschichte des Dramas* is a monument of vast learning, presented in a horrible form; by Hettner—more suggestive than accurate; and by Ranke, in some classical chapters of his *History of England,* 1859. But the unsurpassed, unequalled master of this branch was Bernhard ten Brink, whose great services to Chaucer studies and to *Beowulf* are overshadowed by his classical *History of Early English Literature,* which is the undisputed model of modern literary history. Based on the widest as well as deepest knowledge of medieval literature, it combines absolute accuracy, great originality, and the finest literary taste with a mastery of language to a degree of which no other modern literature can boast an equal. It is the first real history of English literature, and—more than that—a history of English intellect, incomplete on account of the premature death of its author.

The technical side of English poetry has found a voluminous historian in Schipper (1881-88), some of whose pupils, as Luick and Alscher, have followed him. Of the scientific journals devoted to English philology, either entirely or in part, we should mention Herrig's *Archiv* (1846), Elze's *Atlantis* (1846), Ebert's *Jahrbücher, Englische Studien* (1877), *Anglia* (1878), the *Mitteilungen,* the *Bibliographische Jahresberichte,* and the serial publications of a number of universities, like the Bonner, Münchener, and Marburger *Beiträge.*

The other European nations have scarcely competed with the Germans in the field of English philology. Of Spanish contributions I do not know. Of Italian there are the early popular accounts of *Beowulf,* the work of Bellezza and others dealing with Chaucer—rather popular in character—and the beginnings of Shakespeare study. Among the French there is the superficial account of English literature by Chateaubriand, surpassed in superficiality and absolute lack of soundness by Taine's famous book, which, for the older periods at least, cannot claim any consideration, and whose flashes of genius illumine the later periods more in the fashion of lightning than of steady sunlight. Francisque Michel's *Bibliothèque Anglo-Saxonne* (1836) was a good beginning; Sandras's work, pretentious but unsound; and it is only in recent years that more careful study and maturer scholarship have been devoted to English. I mention especially Jusserand and Bapst, Beljame, Henry, and Thomas. Among the "northern" nations Russia has furnished the classical account of Greene, and Denmark has been a stronghold of sound Anglo-Saxon studies: Thorkelin made the first copy of the *Beowulf* manuscript (1786) and the first edition (1815). There are also Grundtvig's studies, editions, and translations (1802-20); Rask's Anglo-Saxon Grammar (1817);

later Worsaae, Steenstrup's work on the Normans, the *Beowulf* studies of Bugge, and the *Studier over Engelske Kasus* of Jespersen (1891). Sweden has Wadstein's recent studies. Holland has the careful work of the brothers Logeman, and Cosijn's brilliant *Beowulf* notes and statistical grammar of the West Saxon dialect.

In America we date the first timid beginnings of English philological studies from the beginning of the nineteenth century. What precedes can scarcely claim the title of belonging to our subject. There are the articles on Americanisms by Witherspoon (1761), Franklin's curious *Scheme for a new Alphabet and a reformed mode of Spelling* (1768), the earlier practical grammars by Robert Ross (1780), Webster (1783), and—if we claim him—Lindley Murray (1795). More valuable are the earlier lexicographical works of Webster (1810), Pickering (1816), Worcester (1846), and Bartlett (1848). Quite unique in interest is Jefferson's little *Introduction to Anglo-Saxon*, and his provision for the first chair of Anglo-Saxon in America. Later come Longfellow's early studies in Anglo-Saxon literature (1836), and the life-work of the Nestor of Anglo-Saxon studies in this country, Francis March.

The foundation of Johns Hopkins University, and its courses modeled (for better for worse) after the German pattern, produced an early harvest of respectable work from Bright and his pupils; while a number of American scholars received their inspiration in Germany. At the head of these are J. M. Hart and Albert S. Cook, the author of the best publications on Anglo-Saxon subjects in this country. Another group may be formed of the pupils of Francis J. Child,—Kittredge, Manly, Gummere, and others, excelling in Middle English and Tudor English; and others are "independent," like Hiram Corson (who would scarcely care to be classed here, but whose *Reader* gives him an early and an honorable place), and Lounsbury, justly regarded as one of the great Chaucer scholars of our time. As the three great names in the history of English philology in America I should not hesitate to name Lowell, Child, and Furness. Lowell's many essays on literary and philological subjects give him a leading rank in our field; from the time of the publication of his *Conversations on the Old Poets* (1845) to his essay on Milton's *Areopagitica* (1890) he treated a great number of subjects belonging to the history of English literature with the hand of a master, the keen eye of a scientist, and the soul of a poet. He must also be regarded as one of the earliest and one of the soundest of Chaucer and Shakespeare scholars; and his introduction to the *Bigelow Papers* contains a very important philological discussion of the New England dialect. He might very well be the leader of American dialect lore. F. J. Child's services to English philology are not confined to his early masterly *Observations on the Language of Gower and Chaucer* (1862-66), valuable not only in the history of Middle English inflections, pronunciation, and metrics, but also of Middle English syntax. To him we owe ultimately, as Dr. Furnivall so charmingly tells us, the Chaucer Society and the Ballad Society. But the one completed masterpiece of English philology which America may be proud of is his collection of Ballads (1883-94), of fundamental and lasting importance: a monument of research, of broad scholarship, sound taste, and critical method, without its equal,—a work further revealing a great personality.

As the last great masterpiece of American philological research—unfortunately not yet completed—we recognize of course what its author modestly calls "A New Variorum Edition" of Shakespeare, a work which, since the publication of its first volume in 1873, has been growing not only in size but importance; a work each volume of which reveals further the stupendous breadth of scholarship, the critical acumen, and the delightful personality of its author, Dr. Furness.

I am at the end of my survey:

Heard are the voices,
Heard are the sages—
The world and the ages.

The achievements in our field have been so great that the temptation is near to fall into the attitude of "rest and be thankful," to give over to the feeling "Wie wir es dann so herrlich weit gebracht"; but the truth of another word of Goethe's is equally great:

"Was du ererbt von deinen Vätern hast,
Erwirb es, um es zu besitzen."

Standing still is falling back; only by renewed, unceasing critical work can a science live and grow. New problems are presenting themselves daily,—great problems, worthy of our life, full of promise, and worthy of a great future.

The net gain of all the past endeavors in the field of English philology seems to consist in (1) the recognition of the aim and purpose of philology as the comprehensive science of the life of the human soul as revealed in the *word;* and (2) the absolute recognition of the historical method as applied to all the different branches. The story of the development of this recognition is the history of English philology: it dawned in the seventeenth century, and was worked out in the period between Hickes and Grimm. It had not to wait for Darwin, as some people seem to think; on the contrary, philological sciences may proudly assert that the careful observation of the development of its object was an established working principle with them before it was ever applied to the natural sciences. It was the working principle of Junius, Wallis, and Hickes in the sixteenth century. The recognition of the historical method in the *grammatical* field was accomplished when grammar gave up being categorical or legislative, when it emancipated itself from the "Thou shalt" of medieval Latin grammar, from practical ends: when it became descriptive, observing the phenomena as they are,—when it became historical. In the *lexicographical* field this method was established when the dictionary, although for practical purposes still arranged in the unscientific alphabetical order, gave up dictating as to the right and wrong use of words, but more humbly tried to serve as a storehouse of information as to word-history,—to give the biography of words. In the field of *literary history* it became established when histories of literature ceased to be biographical dictionaries, catalogues of authors, summaries of this part of literature or that; when private individual likes and dislikes ceased to be the standard of measuring; when literary studies ceased to be directed by and to depend upon individual enjoyment of literature; when the history of literature was recognized as the connected account of literary movements, as one of the most important disciplines dealing with the development of the intellectual and spiritual life of mankind; when the critique, the *causerie,* and the biography became history; when dilettantism gave way to science. In the field of *textual criticism* this recognition became established when the edited texts were not polished up and wilfully changed to suit the linguistic or esthetic standards of modern times, but when the purity of the literary tradition, its preservation or rehabilitation, became the editorial ideal.

That it took a long time for this critical-historical method to conquer, that there were relapses and standstills, is one of the instructive facts which we observe. Some of the important problems that seem to be still waiting their solution are these:

In the grammatical field English philology still lacks a comprehensive phonology of Middle English dialects, and careful investigations (phonological, morphological, and lexicographical) of the language of the sixteenth century, during its important transition period from Middle to Modern English.

Another desideratum is a comprehensive historical syntax of the language. Lexicography is waiting for a comprehensive Anglo-Saxon historical dictionary, and for a Middle English dictionary based on exhaustive collections of the Old French as well as the late Latin language. Only after these preparatory works shall be completed, will a final *history of English words* become possible,—a history which in its turn will serve as a basis for an English semasiology—for which the fullness of time has not yet come. An Old English onomasticon is still waiting for its compiler. In the field of English antiquities a good deal of systematic scholarly work is still to be done.

As far as editions and texts go, the relics of Anglo-Saxon prose are not yet completely collected, nor are the glosses. We have not yet a collection of the earlier English songs (to the sixteenth century); no complete collection even of such an important branch as the historical songs. Further, we want critical, conscientious editions of all the Elizabethan and Jacobean dramatists. And finally, *the* History of English Literature is still to be written.

Drawing some lessons from the history of English philology, we see (1) the truth of Dollinger's saying that all progress in science was brought about by men who had the mastery of more than one discipline and study; (2) that even the greatest promoters were merely links in a great chain, that even the great results grew from small beginnings, and that cöoperation—unselfish, international cöoperation—has been most fruitful in the history of science; (3) that the highest work has resulted from a clear recognition of the problems, unselfish, steady devotion, and true enthusiasm. It seems to me that the more recent class of scholars has the first element, but lacks the proper perspective, the courage to tackle great problems, and that divine enthusiasm which inspired the great masters.

DR. FLÜGEL AS A SCHOLAR[1]

WILLIAM DINSMORE BRIGGS

THE FIRST important piece of work done by Dr. Flügel was his doctor's thesis, entitled *Thomas Carlyles Religiöse und Sittliche Entwicklung und Weltanschauung,* printed in 1887.[2] It was divided into two parts, the first giving a sketch of Carlyle's life from the point of view of his spiritual development, the second examining the nature of his attitude toward the universe. Dr. Flügel apparently did not intend to study his subject from a critical and comparative standpoint; perhaps he felt that the time had not yet come for an attempt of that nature. Carlyle had died but the day before, and the thunders of that mighty voice still reverberated among the hills. The extent and the nature of his influence could not yet be definitely settled, though it was of course inevitable that matters of this kind should be touched upon. The genesis of Carlyle's ideas in his own experience, the profound influence exerted upon him by Goethe, the less profound influence of Schiller, the relation of Carlyle to the transcendental philosophy, contemporary opinion about him,—none of these topics could be entirely avoided, though only the first two are discussed systematically. Such a genetic account of Carlyle's thought was not, however, Dr. Flügel's primary purpose; he desired rather to give an accurate description of what that thought was in itself. With clearness, precision, and tact, he put together an admirable statement, largely in Carlyle's own words, of the main outlines of what most readers must have found at times a rather puzzling matter, namely, just what it was that Carlyle thought and felt. There is no trace of an attempt to force Carlyle's ideas into a preconceived mould. That his attitude toward the problem of slavery was inconsistent with his general scheme and manner of thinking and feeling is frankly recognized; no effort is made to explain the fact away. The question of Carlyle's domestic unhappiness, though necessarily mentioned once or twice, is discreetly left to one side. Incidentally, the notes and text furnish much information as to Carlyle's relation to German thought. Froude's opinion of the book, as expressed in a letter to Dr. Flügel, must not be left unquoted: "Your admirable little book is the first sign I have seen of an independent and clear insight into Carlyle's life, work and character, as it will one day be universally recognized by all mankind. Leaving out Goethe, Carlyle was indisputably the greatest man (if you measure greatness by the permanent effect he has and will produce on the mind of mankind) who has appeared in Europe for centuries. You have seen into this and know how to appreciate it. His character was as remarkable as his intellect. There has been no man at all, not Goethe himself, who in thought and action was so consistently true to his noblest instincts." I have found nothing in the book to prove that Dr Flügel rated Carlyle quite as high as Froude places him. In fact, Dr. Flügel is very careful to leave somewhat uncertain the actual extent to which he agrees with Carlyle. But if we may very well consider Froude's estimate of Carlyle as extravagant, there is no reason for disagreeing with his estimate of the book. If one cared to criticize Dr. Flügel's work at all, one might, from a quite different standpoint from Froude's, suggest that perhaps it was not Carlyle the thinker that was so important as it was the Carlyle who with the insight of genius seized upon certain profound ethical truths and with the volcanic power of his words drove them deeply home. Carlyle seems to me to have been by nature incapable of creating a large and coherent system of thought, and to analyze his *Weltanschauung* is to enumerate a series rather of fiery emotional outbursts than of carefully coordinated ideas. Dr. Flügel would, I think, in reply have repudiated the distinction. To him no philosophy would have deserved the name that was not profoundly impregnated with feeling, and perhaps it would have been the second element to which he would attach the greater importance. One can quite conceive of Dr. Flügel choosing rather to be damned with Plato than sainted with Aristotle.

---

[1] Condensed from an address delivered January 14, 1915, before a memorial meeting of the University Philological Association.

[2] Translated, 1891, by Jessica Gilbert Tyler, as *Thomas Carlyle's Moral and Religious Development.* The first part, the appendices, and most of the notes were unfortunately omitted.

Dr. Flügel's next large piece of work was the publication in 1889 of the standard critical text of Sidney's *Astrophel and Stella* and *Defence of Poesie,* together with a brief account of Sir Philip's life. The volume is of considerable importance because, in addition to providing a sound text and apparatus, it contained new material for the life of Sidney, as well as acute critical observations upon his works. It did not, however, embrace all of the results of Dr. Flügel's researches concerning Sidney, nor have all of these apparently been published. Among his papers is a set of copies of the letters of Sidney obtained as the result of prolonged examination of MS. and printed sources in public and private libraries throughout Europe. Some one-third of these letters were sent to press and the proof-sheets are also among the papers. Besides these, there is the second revise of an English translation of the life mentioned above, together with a form-letter dated at the Clarendon Press, 1892, to be sent out in search of further materials. In this Dr. Flügel states his intention of publishing shortly for the Clarendon Press an edition of Sidney's letters. We can only suppose that, upon removing to California in 1892, and becoming more and more occupied with his work on Chaucer, he found the design impossible of execution.

An important contribution to the pedagogical side of the study of English literature is to be found in the *Neuenglisches Lesebuch,* 1895. In the preface Dr. Flügel gives an interesting account of the origin of this book, according to which it was merely the first volume of a series which was to introduce the student to the original documents by giving these or extracts from these in as accurate a form as possible. This volume was the only portion of the plan carried to completion.

The preface is itself a delightful piece of writing, in its simplicity of language, its frankness of confession, and its enthusiastic idealism. With engaging candor Dr. Flügel gives us glimpses into his early student life, and tells how he excogitated the great plan of which this volume is the earnest during the course of a sleepless night in London. With similar candor he tells us of the many difficulties with which he had to contend in preparing the material, of the many faults which he was well aware the book possessed. And it must be admitted that it had its share of faults.

I have called this book an important contribution; and I see no reason for weakening the assertion. Yet such has not been the opinion of all scholars. I have seen three reviews of it, and these differ markedly in character. One was quite laudatory, the second praised with strong reservations, the third condemned harshly. The fairest judgment is without question that in the *Athenaeum* of May 9, 1896, and the following words express what seems to me to be the truth: "The work admits of being greatly improved; but even in its present shape it will be received with merited gratitude both by German and native students of English." The faults which the book exhibits fall apparently into two principal classes. First, there are those having to do with the reproduction of the documents, arising chiefly out of the difficulties under which the material was made ready for the press. Much of the correcting and of the collation had to be done by others, with the result that errors appeared in considerable numbers. Unfortunate as this state of things was, it did not by any means destroy the usefulness of the work. Secondly, there were errors of a purely philological nature, and these were more serious. Nevertheless, every scholar, even the greatest, has to pass through an educational stage in which his philological equipment is not adequate to the minutely correct execution of a great task. The real question here is as to whether the work we are considering was worth doing in spite of that fact. No doubt can well be entertained on that point when one considers the large amount of valuable material contained in the text and annotations, much of it material that was at the time new, and which students who have no access to large libraries would even now find difficulty in obtaining elsewhere.

In the first volume of *Representative English Comedies*, 1903, Dr. Flügel edited Udall's *Ralph Roister Doister*. The introduction contains some new material for Udall's life and shows an admirable discretion in the interpretation of evidence. But what makes it of special interest is the criticism of the play from an aesthetic as well as historical point of view. Udall's ghost should be grateful to Dr. Flügel for showing so clearly just what the Eton schoolmaster contributed to the development of English comedy, and for pointing out that he was something more than the mere meritorious imitator of the classics that most of us have been languidly content to believe him. The introduction, too, is written in English, an English which is, as a matter of course, clear and correct, and which has also idiomatic liveliness, adapting itself to the purposes of argument as well as to those of literary criticism and humorous comment. Some of it even has the sparkle of Dr. Flügel's talk, and reminds us how completely at home he was in a tongue, which, if we may believe his father's testimony, he did not at first acquire any too easily.

In 1907, in the second edition of Wülker's *Geschichte der Englischen Literatur*, Dr. Flügel published an account of the literature of America. This account, of which a second edition was to have been brought out this year, did not profess to be an elaborate history of the subject, but to present only the main outlines, and occupied only one hundred and twenty-eight pages, besides the bibliographical material. Brief though it be, it is a remarkable piece of work. I confess freely that it gave me a respect for my native literature that I had not previously entertained. American literature is seen in a true perspective, with a natural distribution of light and shade. The author of this 'text-book' understands that his business is not merely to supply a certain amount of information, but to make the student feel the real worth of the subject. Breadth of view combines with exact knowledge and sympathetic feeling, with the result that substantial justice is done. There is a clearing away of dead wood; the object contemplated assumes definite outline, not through any artificial rearrangement of lines and surfaces, but through an emphasis rightly distributed. And by virtue of an instant response, a quick sympathy, a genuine humor, a clear, energetic, and flexible style, Dr. Flügel leads us to see what we are surprised that we had not seen for ourselves.

Let me illustrate as well as can be done by mere figures this sense of proportion. Only fifteen pages are given to the long period from 1607 to 1765, and of these fifteen, six are occupied with Franklin, whose literary activity extended of course beyond the latter date. Six pages are devoted to the years 1765-1788, and of these two are given up to the Declaration of Independence. In passing, I may remark on the fact that Dr. Flügel's discussion of this document as a piece of literature is a striking example of the sureness of his literary criticism. Recognizing, as we all must, the fundamentally unoriginal character of many of its ideas (though he lends no countenance to the charge of plagiarism) and the visionary or doctrinaire quality that pervades so much of it (since after all men do not, as an historical fact, appear to have been created either free or equal), he recognizes at the same time the splendid adequacy with which the ideas are expressed and the extraordinary rhetorical merits which have made the document at once a political manifesto and a national creed. Yet, neither in this criticism, nor in the prominence given to Franklin, nor elsewhere in the volume is there any confusion of historical with literary judgments. A piece of writing is not necessarily a piece of literature because it is of prime historical importance, and the Declaration would not have received its two pages were it not for the fact that its qualities as a piece of literature were partly the cause of its historical importance. In this way there is often a peculiarly intimate association between literary and historical criticism, and the appearance for instance of the Authorized Version in 1611 is for one and the same reason an event of supreme interest for both the literary and the historical student.

It is not of course that one always agrees with Dr. Flügel's judgments. I cannot feel that he really understood *Huckleberry Finn*, though indeed he spoke highly of it, and I venture to think that his enthusiasm for the American ideal of liberty and his abhorrence of slavery led him to find greater merits in *Uncle Tom's Cabin* than that work possesses. Was it not a touch, too, of German sentimentalism that made him speak so warmly of the deathbed scene of Eva, and that made him say that the book stirs the heart of the reader with greater power than any other book since—*The Sorrows of Werther?*

But these are the veriest trifles. In particular matters one differs with any critic. Of greater interest to me is the fact that Dr. Flügel sedulously avoids the discussion of two points upon which he could have spoken to our great profit, but which he undoubtedly felt that he could not even touch upon within the space at his command. Nevertheless, I wish that he might have seen his way to lengthening his sketch by fifteen or twenty pages and have said something about the relation of American literature to the general conditions under which it has grown up, and something about what constitutes the difference between American literature and English, how far that difference is merely one of name rather than substance.

Perhaps the most striking excellence of the volume is the remarkable success with which Dr. Flügel achieved two results: He produced a book which, by virtue of the amount of exact information it contains and of its clear arrangement and definiteness of statement, is a schoolroom manual of the best type; he produced a book which, by virtue of its lucid and sound criticism, its vigor and independence, its power of arousing interest in its subject, has so far as I know, no rival in its own field. It is unfortunate that the best introduction to the study of American literature should be at the disposal of German students only, whereas in our own schools we must perforce rest contented with books that benumb rather than inspire.

At this point I may introduce the subject of Dr. Flügel's activity in the field of periodical literature. In 1889 he became associate editor of *Anglia* and remained such until his death, though naturally after his removal to California he could not take his former active part in conducting the journal. In 1890 he founded the *Beiblatt zur Anglia,* to which he remained during the rest of his life a frequent contributor of notices and reviews. He published something over fifty articles in various periodicals.[8] I cannot of course give a list of these articles here, but I may emphasize the fact that to the scholar such a list would convey much besides the bare titles themselves, and I may quote some words employed by Dr. Flügel himself when, in addressing this association less than a year ago, he was confronted with a similar problem. "That long list of 265 papers, then, which I have not quoted at length in the goodness of my heart, is not a dry catalogue of titles, but the echo of many a spoken word carefully premeditated, pondered over, and uttered—this dry list has a soul, it is like a gallery of ancestral portraits which, if visited at the proper time and in the proper frame of mind, is like any other ancestral gallery—ghost-haunted." It would require, however, an inspiration I have never enjoyed to enliven the series of Dr. Flügel's titles and make visible what lies behind them, the assiduous labor, the patient meditation, the enthusiasm that burned like a clear, brilliant flame.

---

[8] See Bibliography, *post.*

It would be superfluous to lay stress upon the breadth of the field of erudition covered by these papers, an erudition that expatiates at ease whether dealing with the attitude taken toward the study of language by the fathers of the church, the philological proclivities of Roger Bacon, the annotation of a sixteenth-century Christmas song, the sources of Carlyle's thought, the remote recesses of the intricately involved jungle of mediaeval learning, or the comparatively virgin forest of American literature. Dr. Flügel was not, and did not pretend to be a universal scholar of the old type, for the times are past when a man took all knowledge for his province. Nor was he a polyglot like Mezzofanti. But he could handle the literature of his subject in at least twelve different languages, five principal dialects, and a multitude of subordinate ones. His subject was philology in the broad sense of the term, not the narrow, and he himself defined philology as "the comprehensive science of the human soul as revealed in the word." He was a lover of words because he was a lover of life. He loved life because he was himself tingling with life. No aspect of life failed to elicit from him a response, whether of liking or aversion. And if he did not pretend to be a universal scholar of the old type, he had at least some of that type's most ennobling traits, which I may be allowed to display in his own words. At the end of his presidential address before the Pacific Coast Branch of the American Philological Association he said: "We see that the highest work has resulted from unselfish devotion, a clear recognition of the problems and true enthusiasm. It seems that the more recent class of scholars has the first element, but lacks the proper perspective, the courage to tackle great problems and that divine enthusiasm which inspired the great Masters." Even a bitter enemy could not deny to him the perspective, the courage, and the divine enthusiasm.

It will interest you not a little to know that he read twenty papers before this association, of which about one-half seem to have been published or utilized for publication. He read seven papers before the Pacific Coast Branch of the American Philological Association, including the address which he delivered as president in 1901. Abstracts of five of these are to be found in the *Transactions,* and much of the material was used in various ways. He was general editor of Section II of the *Belles Lettres Series.* In the many years of his active connection with Stanford (he spent at least three years in Europe), he gave an average of about one and one-fourth new courses every year, an average which, when we consider the nature of his subject and the small number of seriously-minded graduate students at this institution, is instructive of his patience, his industry, and his hopefulness. You will be pleased as well as interested to learn that of late he had come to feel even more than hopeful and that only a few months ago he told me that he regarded the work done with his graduate classes in the last two or three years with much satisfaction.

Furnivall pointed out many years ago the necessity of a Chaucer concordance, and a certain amount of more or less unsystematic work in accordance with his suggestions had been done by various persons when in 1890 Dr. Flügel volunteered to carry on the task. Whose hand it was that brought the slips into the worse than chaotic condition of which Dr. Flügel speaks in an article addressed to Furnivall I have not learned, though my impression is that there had been some futile attempt at collaboration. It was characteristic of Dr. Flügel, whose brain teemed with grandiose visions of scholarly achievement and whose indomitable energy and then robust health made all things seem possible, that the comparatively modest plan of a concordance should be rapidly expanded into that of a dictionary. It was in the same way characteristic of his sanguine nature that this dictionary should be conceived on a scale, which, as he came reluctantly to perceive, was beyond the powers of any one man to realize. And, characteristically again, the reduced scale was itself one that would have made Quintilian stare and gasp.

Yet for him this restricted scale was realizable. It must be emphasized that Dr. Flügel was pursuing no will o' the wisp, no fleeting phantom that ever persistently evaded his enclosing arms. Already could he descry the distant land. He might already have exclaimed,

> Jam tandem Italiae fugientis prendimus oras.

For the completion of the plan was of late years a matter merely of arithmetic. He knew how rapidly the collated material could be digested into form, how much each week would add to the orderly pile of finished manuscript; he knew the extent and nature of the work that remained to be done. It seemed highly probable that by the end of 1922 he could write Finis. The equation contained, indeed, one unknown factor, that of health, but it was only recently that this factor became of ominous import. No scholar is rash or visionary who undertakes a work which he has every reason to believe that he can finish by the age of sixty.

Upon this point I wish to throw the very greatest stress, for I know that both here at Stanford and elsewhere Dr. Flügel was not infrequently reproached with grasping at the air. Why, it was asked, did he not limit his plan in such a way that he might have some rational hope of accomplishment? Why, indeed! Is an engineer unpractical because he undertakes to build an aqueduct that will demand ten years to finish? Is a statesman visionary because in his youth he initiates a policy that will not come to fruition until his hairs are grey? And yet death comes at any unexpected moment like a thief in the night. It is an ancient and an approved maxim: Judge not of the wisdom of a design by the outcome. Wisdom is shown in the estimation of present chances, in the skilful adaptation of means to ends, in the prudent utilization of resources. The outcome is in the hands of fortune, on the knees of the gods. *Initia in potestate nostra sunt, de eventu fortuna iudicat.* There lies no reproach against Dr. Flügel of being rash, visionary, or unpractical. And no doubt he confidently believed, with that idealism of nature that constituted so large a part of his personal charm and that counted for so much in determining the quality of his learning, that even if he should die before completing his task, yet in the present advanced state of scholarship, somewhere, somehow there would be found a man who would bring the work to full perfection.[4]

I have been asked what is the worth, the value of the uncompleted dictionary. Is a dictionary half-completed worth anything at all? There seems to be an idea abroad that the worth of a dictionary may be judged in some kind of inverse ratio to the degree of completion. Such may perhaps be the case with a work of art, a poem, for instance, the object of which is to create in the reader an emotional state or to carry him through a series of emotional experiences of which the outcome is a certain emotional equilibrium, a certain harmony of feeling. The whole must exist before the parts can produce their proper impression, and in a work of art incompleteness is a form of imperfection. In a business enterprise to stop half-way may be to make your last state worse than your first. But such is not the case with a dictionary. The worth of a dictionary half-completed is only a little less than one-half the worth of the same dictionary in a finished state. The completed portion of the Chaucer Dictionary can be used by scholars, for whom it was of course primarily intended, almost as well as if the whole were in existence.[5]

---

[4] The dictionary will be carried on by Dr. Tatlock.

[5] Of course, it cannot be effectively used for the study of groups of words of similar or related meanings unless by good fortune the group chances to fall within the first seven letters of the alphabet.

Were there no prospect of a single page being added to the existing manuscript, Dr. Flügel's labors would still have been well spent.

Dr. Flügel had at various times a good deal of assistance, but until recently, when Dr. Kennedy began to help him in a way for which Dr. Flügel found words of very high praise, that assistance was entirely of a clerical nature. He was occasionally able to utilize his graduate students in the study of special problems and in the examination of related literature, yet the most they could do was to provide material which only he could work up into shape. Of copyists and writers-out of slips he necessarily had many at various times, for the personal and unaided collection of the material would have been impossible. Nevertheless, he did himself an incredible amount of work of just this kind, for these copyists were of various sorts, and a good deal of what some of them did he practically had to do over again. The total amount of material finally got together amounted to something over one million five hundred thousand slips, in addition to large collections of a collateral nature. This material he was casting into shape with remarkable rapidity. In the six months from December, 1913, to June, 1914, he worked through thirty thousand of these slips. As nearly as I have been able to calculate, the dictionary is about seven-sixteenths finished; Dr. Flügel was at work on the word 'hewe' at the time of his death. Most of this manuscript is practically ready for press, but he intended to subject it all to a final looking-over, and there are a few articles not yet supplied.

Why was not the manuscript published as it was prepared, since the Carnegie Foundation stood ready to undertake the work? There were several reasons for Dr. Flügel's course in this matter. In the first place, there were problems connected with the actual printing that could not easily be solved, and into which it is not necessary to go on this occasion. Secondly, as I have elsewhere pointed out, Dr. Flügel had for some time realized that the work might be interrupted in just the way it actually was, and naturally desired to expend all of his energy and time upon that part to which his learning and experience were indispensable. The printing could, if necessary, be supervised by others. The preparation of the copy demanded him. The third reason can perhaps be best given in words taken from his open letter to Weir Mitchell in 1913.

"You may ask now what others are asking me almost every week, *when* the whole of my book will be accessible in printed shape, and here again I answer, and, I hope, not evasively, that, at this early stage and before the *whole* MS. shall be completed, I cannot consider even the printing.

"I have now about three days weekly for the MS. work, and the MS. so far completed would fill at least two quarto volumes of one thousand pages each (with three columns to the page).[6] If I should now, in order to publish two such volumes in reasonable time, receive weekly the proofs of only thirty columns (ten pages), the mere careful proofreading of thousands of quotations would take the *daylight* of, at least, two days, leaving me only *one* day for *new* MS.! This would delay the finishing of the MS. in such a way that twenty-one years would elapse, instead of the seven on which I count.

"*Ergo*, the whole question of printing now and under my present conditions cannot be considered by me. *Fata viam invenient.* In six or seven years (if I live) with one or two excellent proof-readers continuously engaged for this work, and with better-schooled printers than can be found, at least in this western part of the United States, the book might and, I hope, will be 'rushed' through the press as fast as the wheels can move."

At one time, some years ago, Dr. Flügel gave me an account of his plan that made it evident that then he had something more even than a Chaucer dictionary in mind; he then intended to make his work a dictionary of Middle English for the vocabulary of Chaucer, in which Gower, Wiclif, Trevisa, Langland, and Hoccleve should be second in importance only to Chaucer himself, and in which the less important writers should receive proportionate attention. One might infer from the language of his remarks to Furnivall in the article above referred to that he had abandoned this project, but I have reason to think that he was unduly modest in that description of his revised plan and that he had not changed his design to quite the extent that might be supposed.

In dealing with each of Chaucer's words, Dr. Flügel's object was to place on record every fact about it that could possibly be of interest to scholars. Thus any peculiarity of form exhibited in any of the MSS. or early editions was set down.[7] The various spellings that the MSS. exhibited were classified and their relative numbers given as accurately as possible. Differences of pronunciation, metrical peculiarities, peculiarities of rime, were similarly treated. The history of each word, whether of English or foreign parentage, was minutely investigated in its native haunts, for Dr. Flügel realized to the full that shades of meaning displayed by a borrowed word can often be explained only by the shades of meaning that it bore originally. He saw also what not all lexicographers have clearly perceived, that illustrative quotations should be sufficiently full. When only a line is given, a particular word contained in it will often seem to have a meaning quite different from that which it bears when a passage of three, four, or five lines confronts us. Remote context is sometimes quite as important as immediate. I have more than once heard Dr. Flügel complain that he often found the quotations on his slips too short, and that he was constantly compelled to resort to the original and himself add what was necessary in order to make the quotations adequately illustrative. Yet another feature of his method that must not be passed over was the care with which he ascertained the exact chronological order in which the various meanings of a given word made their appearance in its development. Obviously, if this chronology be misstated, the intellectual history of the race is to that extent falsified. I can remember several instances in which he pointed out to me that in the *New English Dictionary* just this error had been made, and the history of a given word inverted. Sometimes, it may be noted, the mistake was made just because the quotation supplied by the copyist was not long enough, and so the word in the particular passage was not rightly understood. And I can also remember what a source of innocent delight it was to Dr. Flügel to discover, as he not infrequently did, earlier quotations than those in that great work, and thus to antedate the word and lengthen its history.[8]

---

[6] Dr. Flügel means the MS. of A, B, C, D, E. The finished dictionary would then fill about six such volumes.

[7] For a list of the MSS. and early editions consulted, see the article entitled *Prolegomena and Side-notes*, 1911.

Sir Philip Sidney, with characteristically pregnant phrase, wrote once of "this purifying of wit, this enriching of memory, enabling of judgment, and enlarging of conceit, which commonly we call learning." Yet even more than this passage suggests did Dr. Flügel enlist in the service of his chief work every element in a richly compounded personality. Upon the dryest and most unpromising details, upon the very drudgery of his profession, he brought enthusiastically to bear all the facets of his intellect, all the highly developed powers of his mind, fructifying his labor with sympathy and feeling. Thus what he accomplished is peculiarly difficult of analysis, because it is an emotional as well as an intellectual product, one in which the various elements fuse and interpenetrate. Familiar with the most exacting methods of scientific investigation, he shrank from no labor in applying them in all their elaborate fullness of intricate detail. Yet the mechanics of his profession, which to so many scholars furnish practically their sole means of achieving results, were for him in no sense all-sufficient. A sound methodology is indispensable to the student; of equal importance, however, are tact and discretion in its use, insight, that power of discriminating interpretation that, in so far as it is not an innate faculty, is the fruit of character and emotional education. When all of these combine to produce a work of scholarship, the result cannot be easily dissected, any more than a work of literature or art. Often, as in the case of a dictionary, the results of the complex critical process may be visible only in the shape of separate bits of information, which, to the laity, appear the outcome merely of a methodically directed industry. So in the case of the *Chaucer Dictionary*, it is easy to state the plan, the scope, the purpose, and the method. It would be less easy, though still not difficult, to convey some idea of the patience, the diligence, the fortitude with which the labor was carried on. But I should despair of making plain to anyone but the adept the subtle way in which every finer and more delicate quality of Dr. Flügel's mind and heart was utilized to discharge what was at bottom a task demanding not merely philological skill, but literary sensitiveness, not merely accumulated knowledge, but all the higher powers of the critic of poetry. "To readers familiar with such studies, no comment is necessary, and to those who are unfamiliar with them, no form of statement can convey even a faint impression of the industry, the acumen, and the literary skill which these processes required."[*]

---

[8] Several sample extracts from the *Chaucer Dictionary* were printed by Dr. Flügel in the *Matzke Memorial Volume* and in *Anglia* for 1911 and 1913. These articles differ from one another, however, in some points that make it not quite clear in just what form the material would have finally appeared. Thus in the Matzke volume, though he tells us that the article is from the dictionary, many footnotes are employed, and Dr. Kennedy informs me that Dr. Flügel more than once spoke of inserting footnotes in the dictionary. But in an article printed later and headed 'Specimens of the Chaucer Dictionary,' no footnotes are found, and I am inclined to think that he had given up the idea. At least no material appears to be thrown into footnotes in the MS. Again, in the article addressed to Furnivall he used language indicating that the article is made up of 'raw material,' 'which would become antiquated in a short time' and which he intended to exclude. Yet Dr. Kennedy again tells me that he cannot see that the illustrative pieces in this article differ at all from the finished MS. I think that the explanation of at least some of these apparent discrepancies may very probably be found in the suggestion that in these various articles he was experimenting somewhat as to the best method of presentation.

---

[*] From Kittredge's memorial article on Child.

BIBLIOGRAPHY

1884. Eine Erinnerung an Schönaich. *Deutsches Alterthum.*

1885. Zu Goethe's Verhältnis zu Carlyle. *Grenzboten,* no. 38, Sept. 17.

1887. Thomas Carlyle's Religiöse und Sittliche Entwicklung und Weltanschauung.

Der Briefwechsel zwischen Goethe und Carlyle. *Grenzboten,* no. 15, April 7.

1889. Pyramys and Tysbe. *Anglia,* XII, 13.

Liedersammlungen des 16. Jahrhunderts, besonders aus der zeit Heinrich's VIII. *Anglia,* XII, 225, 585, and XXVI, 94.

Ein Brief Emersons. *Anglia,* XII, 454.

1891. Thomas Carlyle's Moral and Religious Development. From the German by Jessica Gilbert Tyler.

Verschollene Sonette. *Anglia,* XIII, 72.

Kleine Mitteilungen zur Litteraturgeschichte des 16. Jahrhunderts. *Anglia,* XIII, 455.

Beiblatt zur Anglia. Erster Band. Founded by Dr. Flügel in 1890.

Dean Colet und die gründung der St. Paulsschule. *Anglia Beiblatt,* I, 275, 292, 330.

1892. Die Gedichte der Königin Elizabeth. *Anglia,* XIV, 346.

Kleinere Mitteilungen aus Handschriften. *Anglia,* XIV, 463.

1894. Englische Weihnachtslieder aus einer Handschrift des Baliol College zu Oxford. *Forschungen zur Deutschen Philologie: Festgabe für Rudolph Hildebrand,* 52.

1895. Neuenglisches Lesebuch. Band I.

Review of Skeat's Chaucer. *Dial,* Feb. 16.

1896. Die Handschriftliche Überlieferung der Gedichte von Sir Thomas Wyatt. *Anglia,* XVIII, 263, 455, and XIX, 175, 413.

The Irreverent Doctor Faustus. *Anglia,* XVIII, 332.

Über einige Stellen aus dem Almagestum Cl. Ptolemei bei Chaucer und im Rosenroman. *Anglia,* XVIII, 133.

Some Notes on Chaucer's Prologue. *Journal of Germanic Philology,* I, 118.

1897. Francis James Child. *Anglia Beiblatt,* VII, 377.

1898. Zur Chronologie der Englischen Balladen. *Anglia,* XXI, 312.

1899. Sir Philip Sidney's Astrophel and Stella und Defence of Poesie. Nach den ältesten Ausgaben mit einer Einleitung über Sidney's Leben und Werke.

Chauceriana Minora. *Anglia,* XXI, 245.

Bacon's Historia Literaria. *Anglia,* XXI, 259.

Chaucer's Kleinere Gedichte. *Anglia,* XXII, 510, continued in XXIII, 195.

Middle English in the High School. *Proceedings Southern California Teachers' Association,* VIII, 138.

1901. Nicholas Udall's Dialogues and Interludes. *An English Miscellany presented to Dr. Furnivall in Honour of his Seventy-fifth Birthday,* 81.

Zu Chaucer's Prolog zu C. T. *Anglia,* XXIII, 225.

Shelley's Sophocles. *Anglia,* XXIV, 436.

Gower's Mirour de l'Omme und Chaucer's Prolog. *Anglia,* XXIV, 437.

1902. Roger Bacon's Stellung in der Geschichte der Philologie. *Philosophische Studien,* XIX, 164.

A British Academy. New York *Nation,* April 10, 287.

1903. Nicholas Udall. Roister Doister. *Representative English Comedies,* 1903, 87.

Carlyle und Eckermann. *Goethe Jahrbuch,* XXIV, 4.

References to the English Language in the German Literature of the First Half of the Sixteenth Century. *Modern Philology,* I, 5.

Caxton's Old English Words. *Modern Philology,* I, 343.

Commencement Address. *Daily Palo Alto,* May 25.

1904. Henry Bradshaw: Librarian and Scholar. *Library Journal,* XXIX, 409.

1905. Eine Mittelenglische Claudian-Übersetzung. *Anglia,* XXVIII, 255, 421.

1906. Die Katastrophe in San Francisco. *Illustrierte Zeitung,* May 3.

Der Erdbebenschaden an der Stanford Universität bei San Francisco. *Reclams Universum,* XXII, 849.

1907. Die Nordamerikanische Literatur. R. Wülker's *Geschichte der Englischen Literatur,* second edition.

A New Collation of the Ellesmere MS. *Anglia,* XXX, 401.

1909. Die älteste Englische Akademie. *Anglia,* XXXII, 261.

1910. Frederick James Furnivall. Ein Nachruf. *Anglia,* XXXIII, 527.

1911. Prolegomena and Side-notes of the Chaucer Dictionary. *Anglia,* XXXIV, 354.

Benedicitee. *Matzke Memorial Volume,* 94.

Frederick James Furnivall. *Frederick James Furnivall, A Volume of Personal Record,* 205.

1913. Lucy Toulmin Smith. Ein Nachruf. *Anglia,* XXXVII, 277.

Specimens of the Chaucer Dictionary, Letter E. *Anglia,* XXXVII, 497.[1]

---

[1] No attempt has been made to list Dr. Flügel's numerous minor contributions to *Anglia Beiblatt.*

THE "COMEDIA QUE TRATA DEL RESCATE DEL ALMA" AND THE "GAYFEROS" BALLADS

CLIFFORD GILMORE ALLEN

THE RELATION of the Spanish drama to the ballad literature has been discussed by Don Ramón Menéndez Pidal in his work entitled *L' épopée castillane à travers la littérature espagnole.* In regard to the religious drama he says (p. 238) that the *autos sacramentales* in the first years of the seventeenth century were in close relations with the *romancero,* that in the earliest *autos* the ballads were almost always placed in the mouths of the comic characters or *bobos,* but in the seventeenth century the *autos* incorporated the ballads in the action, giving them a religious interpretation. Of this latter class of *autos* he cites *La Venta de la Zarzuela* and *La locura par la honra* by Lope de Vega, and *La Serrana de Plasencia* and *El villano en su rincón* by Valdivielso.

This paper deals with an *auto* which gives a religious interpretation to a series of old ballads, and which is considerably older than the *autos* cited by Menéndez Pidal. The *auto* is found in Ms. No. 14864 of the Biblioteca Nacional at Madrid. The manuscript contains eleven *autos sacramentales* and, also, *La gran comedia de los hechos de Mudarra.* The *auto* in question is the second of the manuscript. The end of the manuscript bears the date of 1582. This is evidently the date when it was written. The *autos* are anonymous, and their dates probably correspond to the dates of the works in the collection published by Rouanet, the *Colección de autos, farsas y coloquios del siglo XVI.* Only one *auto* is dated, the eighth, the *Auto sacramental del testamento de Cristo, hecho a deboción de la sancta yglesia de Toledo, que la mandó componer en el año 1582.* The *auto* studied here, then, is as early as 1582 and may be considerably earlier.

The ballads on which the *auto* is based are the ballads of Don Gayferos. The ballads concerning him are found in Wolf's *Primavera y flor de romances* (reprinted by Menéndez y Pelayo in the *Antología de poetas líricos castellanos*), in Duran's *Romancero general* (vol. 10, p. 246 of the *Biblioteca de autores españoles*), etc.

In order to explain the relation of the *auto* to these ballads it will be necessary to state a part of their contents.

Gayferos has married Melisendra, the daughter of the Emperor

Charlemagne. She has been made prisoner by the Moors and is held by them at Sansueña. Gayferos is seated in Charlemagne's palace playing at *Tablas,* in one ballad with Oliveros, in another with Guarinos. Charlemagne appears and upbraids Gayferos for playing when he should be rescuing his wife. Gayferos goes to his uncle Roland. He tells how Charlemagne has reproached him. He says he has hunted three years for his wife, and has been unable to find her. He now has neither horse nor arms, and asks Roland to give him his. Roland tells him he has taken oath never to give anyone his arms. Gayferos is indignant. Roland now says that the refusal was only to test him, and wishes to give him his horse and his arms and to accompany him in his undertaking. Gayferos insists on going alone. Roland arms him and he prepares to ride away. At the last moment Roland gives him his wonderful horse and his magic sword. Gayferos refuses to take the time to say farewell to his mother, and sets out, promising not to return to France until he has rescued his wife. Reaching the land of the Moors he curses the wine and the bread. He finally reaches Sansueña. The king, Almanzor, is at the mosque. A Christian slave directs Gayferos to the palace where Melisendra is imprisoned. He sees her at a window. She does not recognize him, and asks him, if he is going to France, to tell Gayferos of her plight. She fears that he is afraid to come to her rescue, or that he now loves some other woman, as it is easy to forget those who are absent for those who are present. She asks him then to tell Oliveros or Roland, or the emperor, her father, as the Moors wish her to marry a Moorish king. Gayferos tells her who he is, and she comes down to him. The alarm is given and the city gates closed, but the horse on which both are mounted leaps the city walls. The Moors pursue and surround them. Gayferos leave his wife in a thicket, and, turning against the Moors, slaughters vast numbers of them with Roland's wonderful sword. The rest of the Moors return to the city and Gayferos and his wife go on unharmed. They reach France and meet Gayferos' cousin, Montesinos. Other knights, as well as various ladies, join their party. They finally reach Paris, where they are met by Charlemagne and several of the peers. The emperor embraces his daughter, and the peers hold Gayferos in great esteem because he has rescued his wife.

This situation of Gayferos is exploited in several ballads which moralize on the risk a husband runs who does not protect his wife as he should, or who stays away from her presence.

The *auto* in question, beginning on folio 19^v of the manuscript, bears the title *Segunda comedia, que trata del rescate del alma. Son ynterlocutores Dios Padre y Cristo, el Spíritu Sancto, el demonio, el mundo, la carne, el alma, el amor divino, un ángel, la esperansa.* It is a religious interpretation of the episode of the rescue of Melisendra by Gayferos. The plot of the *auto,* with its relation to the ballads, is as follows:

The soul, which at times is given the name of Melisendra, is the wife of Christ, who is frequently called the divine Gayferos. She is the prisoner of the world, the flesh and the devil, who correspond to the Moors. She is exiled from the Paris of Paradise in the France of Heaven, and is lamenting in a dungeon in *infierno,* which corresponds to the land of the Moors. She tells her tears to say to God that she has tried for five thousand years to regain her lost glory, and to ask him to come to her rescue. She tells her sighs to say to God that he has forgotten her, and for this reason she is suffering. This seems to be an echo of Melisendra's complaint to the knight who turns out later to be her husband.

Now Christ and divine love appear. Divine love addresses Christ as divine Don Gayferos, and challenges him to a game of *tablas.* This is the game at which Gayferos is playing in the ballads when Charlemagne appears and upbraids him for not rescuing his wife. Christ asks at what *tablas* they are to play. Divine love says at the *tablas* of his law. Whatever divine love gains he promises to give to the man who will keep Christ's law. They play, and divine love wins.

Christ now prepares to pay his debt. At this point God the father and the Holy Spirit appear. God the father corresponds to the Charlemagne of the ballads. He addresses Christ as Gayferos, and, as Charlemagne rebukes his son-in-law for not going to the rescue of Melisendra, so God rebukes his son. It is no time, he says, to play at *tablas.* His wife, the soul, is calling him. He should put on his armor, as her salvation depends on him. As he has given his word to his wife, he should not forget her. It should not be said in beautiful France (*i. e.,* in heaven) that Gayferos does not protect his wife. It should not be said that God has forgotten Melisendra (*i. e.,* the soul). Christ responds that he has loved his wife from the beginning. If he has stayed so long in the royal dwelling it has been because Adam destroyed the arms received of God (his innocence?), but if love will give Christ his arms the latter will not rest until he has rescued his wife from hell. In the ballads Gayferos has lent his arms to his cousin Montesinos, and asks his uncle Roland for his. Here Gayferos also promises never to return without his wife.

The Holy Spirit then promises to arm him and accompany him on his journey. Christ swears that if he once puts on these arms he will not take them off until Melisendra is free. Gayferos in the ballads makes the same promise. God the father now leaves the stage, and Christ in a monologue speaks of the sorrows he will have to undergo in accomplishing his task. This monologue has little or no relation to the ballads.

An angel now brings him a cross and a shield on which are represented the insignia of the passion. These are to be his arms. The angel explains them one by one. Christ's sword is to be the floggings, the thorns and the nails. His banner is to be the cross. The battle is to be for the redemption of the soul. The idea of the arms comes from the description of the arms which Gayferos receives from his uncle Roland.

Christ consents to everything in order to free the soul. The flesh now appears and asks what these strange arms mean, the invincible shield and the cross. Christ says that with them he is to rescue his beloved wife who is imprisoned by a Moor (*i. e.*, the devil). Christ departs and the flesh decides to go and tell the news to Lucifer. The soul now appears. She laments her hard fate, and calls on her husband to come to her aid. Finally she is weary and falls asleep. Hope appears and decides not to awaken her, but to tell her in a dream that God is coming to rescue her. This she does, and the soul awakes rejoicing. The flesh has told the devil of the warrior who is coming to rescue the soul. The devil fears that this is the promised Messiah, and they decide to put the soul in double chains. Christ now appears, and, addressing himself as a valiant soldier, exhorts himself to be courageous and to do the work which God has assigned to him. He reaches the "infernal house" where the soul is. The latter appears at a window.

The following scene is copied more or less directly from the ballads. The soul does not recognize Christ, as Melisendra in the corresponding scene fails to recognize Gayferos. The soul thinks that Christ is a Christian captive like herself, and prays that God may give him his liberty.

Dios os ponga en libertad.

In the ballads Gayferos meets a Christian slave and inquires for Melisendra. The slave thinks he also is a Christian captive, and says:

Dios te salve el cristiano,
y te torne en libertad.

In a long conversation which follows, Christ tells the soul that he was born in France in the city of Paris. The author is following his sources even too closely, but it is *el París del paraíso* and *la Francia del cielo.*

The soul tells him if he returns to Paris to ask for Gayferos.

Si a Francia ydes
por Gayferos preguntad.

Melisendra uses the same words in the ballads, but the soul goes on to say that she is asking for *el divino Gayferos.* Tell him, she says, that his wife sends to make a request.

Diréysle que la su esposa
se l' enbía a comendar.

In the ballads Melisendra says:

Decidle que la su esposa
se l' envía a encomendar.

The soul says to tell her husband that it is time that he came to rescue her.

Diréisle a mi amor qu' es tiempo
de me benir a sacar.

In the ballad Melisendra says:

Que ya me parece tiempo
que la debía sacar.

He should not let her die in the hands of the enemy, and those who are absent should not be forgotten for those who are present.

que ausentes por presentes
no se deben olvidar.

In the ballads Melisendra says:

Los ausentes por los presentes
lijeros son de olvidar.

Christ now tells her that she is telling this to her own husband, and thus reveals his identity. In the ballads Gayferos tells Melisendra she can deliver her own message, as he is Gayferos.

The soul then goes on to tell Christ of the visit of the flesh to hell. From this point the *auto* is independent of the ballads, and is more or less closely related to the Bible account. The soul leaves the window. Christ laments his fate, but declares his death will be her salvation. His flesh is weak and he does not wish to die, but the Lord's will must be done.

Now the world, the flesh and the devil appear and plan to win the soul back again.

Christ comes back, having risen from the dead. He explains to the soul all he has suffered for her, and the soul promises never to forget, and is baptized. Christ then tells the soul that he must go, but that, at the same time, he will stay with her in the holy sacrament of the eucharist. Christ then departs and the soul continues giving thanks for the sacrament, by which she is made, instead of a miserable slave, a friend of God.

This auto, then, is a religious interpretation of the rescue of Melisendra by Gayferos. The soul is Melisendra. It is the prisoner of the world, the flesh and the devil. These correspond to the Moors. Christ is Gayferos, and is rebuked for his negligence by God, who corresponds to Charlemagne. He rescues the soul and brings it back to paradise, which corresponds to Paris. He receives arms of divine love, which corresponds to Roland. The circumstances in which Christ meets the soul are those in which Gayferos finds Melisendra, etc., etc. The author adds considerable matter, either original or taken from the Bible; but the main plot is taken directly from the ballads.

As the author of the *auto* follows so closely the story told in the ballads, it seems surprising that he does not introduce more direct quotations. The fact that he does not is probably due to the verse forms which he uses. In the *auto* we have six series of *redondillas,* two of *quintillas,* four of octaves, one of tercets, and one of verses in *arte mayor,* with one scene in prose. In no case does the author use the ballad verse. Accordingly considerable ingenuity was necessary for the introduction of these verses from the ballads. The author could never introduce more than two of the short ballad verses at one time. These he quotes invariably when he is writing *redondillas.* The two ballad verses make half of the *redondilla,* to which he must add two verses of his own composition, with the necessary rhymes. In the first case he adapts the second line from the ballad, and adds three verses.

CHRIST. . . . *hermosa dama.*
THE SOUL. *Dios os ponga en libertad.*
CHRIST. *Y de hesa captibidad*
libre os bea quien os ama.

In the second, third, fourth and fifth cases the author adopts the third and fourth lines from the ballads and adds the first two lines as follows.

THE SOUL. *Ay yngrata voluntad,*
ay lengua y como te ynpides.
. . . *si a Francia ydes*
por Gayferos preguntad.

THE SOUL. *Y si más largo ablar*
no fuera cosa enfadosa
diréysle que la su esposa
se l'enbía a comendar.

THE SOUL. *Y pues que me queréis dar*
tal alibio y pasatiempo,
diréisle a mi amor qu'es tiempo
de me benir a sacar.

THE SOUL. *Dile, así te beas gozar*
lo que de mi pena sientes,
que ausentes por presentes
no se deben olvidar.

Doubtless the author quoted only from memory, as these ballads were especially well known; but even then the difficulties in versification make these quotations less frequent than they would have been otherwise.

The *auto* studied here, then, is of interest, as it gives an example considerably earlier than any hitherto cited, of a religious drama based on the old ballad literature.

The literary value of the work is much the same as that of others of its class. Many of the lines are prosaic and monotonous, while others are of real merit. Doubtless it will interest most those who are studying the development of the religious drama in Spain.

"CYNTHIA'S REVELS" AND SENECA

WILLIAM DINSMORE BRIGGS

IN THIS paper an attempt is made to indicate the nature and extent of Ben Jonson's indebtedness to Seneca in the composition of *Cynthia's Revels*. The quotations from the play are from the Folio of 1616.

In the long speech by Crites in I, v, rebuking the madness of those who practise vice and folly, many of the sentiments remind one of Seneca, but the passage following is clearly taken from him.

> O how despisde and base a thing is a man,
> If he not striue t'erect his groueling thoughts
> Aboue the straine of flesh! But how more cheape
> When, euen his best and vnderstanding part, . . .
> Floates like a dead drown'd bodie, on the streame
> Of vulgar humour, mixt with commonst dregs?

Seneca, *Nat. Quaest.*, I, prologus 5: "O quam res est contempta homo, nisi supra humana surrexerit! quamdiu cum adfectibus conluctamur, quid magnifici facimus?"

In II, iii, 127 ff., occurs the character-sketch of Crites delivered by Mercury. "A creature of a most perfect and diuine temper. One, in whom the humours and elements are peaceably met, without emulation of precedencie: he is neyther to phantastikely melancholy, too slowly phlegmaticke, too lightly sanguine, or too rashly cholericke, but in all, so composde & order'd, as it is cleare, *Nature* went about some ful worke, she did more then make a man, when she made him. His discourse is like his behauiour, vncommon, but not vnpleasing; hee is prodigall of neyther. Hee striues rather to bee that which men call iudicious, then to bee thought so: and is so truly learned, that he affects not to shew it. Hee will thinke, and speake his thought, both freely: but as distant from deprauing another mans merit, as proclaiming his owne. For his valour, tis such, that he dares as little to offer an iniurie, as receiue one. In summe, he hath a most ingenuous and sweet spirit, a sharp and season'd wit, a straight iudgment, and a strong mind. *Fortune* could neuer breake him, nor make him lesse. He counts it his pleasure, to despise pleasures, and is more delighted with good deeds, then goods. It is a competencie to him that hee can bee vertuous. He doth neyther couet nor feare; hee hath too much reason to doe eyther: and that commends all things to him.

"*Cvp.* Not better then *Mercury* commends him.

"*Mer.* O, *Cvpid,* tis beyond my *deitie* to giue him his due prayses: I could leaue my place in heauen, to liue among mortals, so I were sure to be no other then he."

In the first few lines of this passage Crites is described as one in whom the humors are properly balanced. There is at first sight nothing in this that would seem to direct us especially to Seneca, for of course the physiological doctrine of the origin of character in accordance with the predominance of the various bodily fluids (themselves definitely related to the four elements) was orthodox medical doctrine in Jonson's day. But in the study of Jonson's treatment of character, no attention, so far as I know, has been paid to the fact that this doctrine is stated with the utmost explicitness in a classical author for whom Jonson had the greatest respect and from whose writings he drew a very large amount of material, only a portion of which has hitherto been pointed out. I make no apology, therefore, for quoting in full chapter xix of the *De Ira,* book ii. "Opportunissima ad iracundiam fervidi animi natura est. nam cum elementa sint quatuor, ignis, aquae, aeris, terrae, potestates pares his sunt, fervida, frigida, arida atque humida. et locorum itaque et animalium et corporum et morum varietates mixtura elementorum facit et proinde in aliquos magis incumbunt ingenia, prout alicuius elementi maior vis abundavit. inde quasdam humidas vocamus aridasque regiones et calidas et frigidas. Eadem animalium hominumque discrimina sunt: refert quantum quisque humidi in se calidique contineat. cuius in illo elementi portio praevalebit, inde mores erunt. iracundos fervida animi natura faciet: est enim actuosus et pertinax ignis. frigidi mixtura timidos facit: pigrum est enim contractumque frigus. Volunt itaque quidam ex nostris iram in pectore moveri effervescente circa cor sanguine. causa cur hic potissimum adsignetur irae locus, non alia est, quam quod in toto corpore calidissimum pectus est. Quibus humidi plus inest, eorum paulatim crescit ira, quia non est paratus illis calor, sed motu adquiritur. itaque puerorum feminarumque irae acres magis quam graves sunt levioresque dum incipiunt. siccis aetatibus vehemens robustaque ira est, sed sine incremento, non multum sibi adiciens, quia inclinatum calorem frigus insequitur. senes difficiles et queruli sunt, ut aegri et convalescentes et quorum aut lassitudine aut detractione sanguinis exhaustus est calor. In eadem causa sunt siti fameque rabidi et quibus exsangue corpus est maligneque alitur et deficit. vinum incendit iras, quia calorem auget pro cuiusque natura. quidam ebrii effervescunt, quidam saucii. neque ulla alia causa est, cur iracundissimi sint flavi rubentesque, quibus talis natura color est, qualis fieri ceteris inter iram solet. mobilis enim illis agitatusque sanguis est." In all this Seneca was of course making no original contribution to philosophy,[1] but, as Jonson lay under so great a debt to Seneca in so many ways, the passage is worth notice in this connection. It may also be observed that, though Plutarch, from whom likewise Jonson drew much, mentions in his essay *Concerning the Cure of Anger* the proneness of women, sick men, and old men to become angry, he does not refer it to any such physical cause, but rather to a certain mean-spiritedness and weakness of soul (Translation of 1870, I, 43).

When Mercury says that Nature in making Crites did more than make a man, and, later on, that he would be willing to become mortal if he could be certain to be another Crites, he is simply giving expression in various ways to one of Stoicism's most prominent ideas. The *sapiens*, as Seneca is never weary of saying, is above mankind in general and on a level with, nay, even above the gods themselves. *De Providentia*, vi, 6: "ferte fortiter. hoc est quo deum antecedatis: ille extra patientiam malorum est, vos supra patientiam." And *Ep.* lxxiii, 12 ff.: "Solebat Sextius dicere, Iovem plus non posse quam bonum virum: plura Iupiter habet, quae praestet hominibus, sed inter duos bonos non est melior, qui locupletior. . . . Iupiter quo antecedit virum bonum? diutius bonus est: sapiens nihilo se minoris aestimat, quod virtutes eius spatio breviore cluduntur." And *Ep.* liii, 11: "Est aliquid, quo sapiens antecedat deum: ille beneficio naturae non timet, suo sapiens."

In the last six lines of Mercury's first speech, Jonson has in mind the following passages. *De Vita Beata*, iv, 2: "ut beatum dicamus hominem eum, cui nullum bonum malumque sit nisi bonus malusque animus: honesti cultor, virtute contentus, quem nec extollant fortuita nec frangant, qui nullum maius bonum eo quod sibi ipse dare potest noverit, cui vera voluptas erit voluptatum contemptio." *Ibid.*, v, 1: "potest beatus dici, qui nec cupit nec timet beneficio rationis." *Ibid.*, vi, 2: "beatus est is, cui omnem habitum rerum suarum ratio commendat."

As for the sentence that his valor dares as little to offer an injury as to receive one (with which should be compared *New Inn*, IV, iv, 55, "Feare to doe base, vnworthy things, is valour," and *Underwoods* lxxxix,

---

[1] Arnold, *Roman Stoicism*, 1911, 244, thinks that this theory was "probably not specifically Stoic, but derived from the Greek physicians."

"No, it is the law
Of daring not to do a wrong"),

I cannot find that Seneca expresses the idea in quite that way, but it was implicit in the Stoic definition of 'fortitude,' as given in Cicero, *De Officiis,* I, xix: "Itaque probe definitur a Stoïcis fortitudo, cum eam virtutem esse dicunt propugnantem pro aequitate." Hence Cicero goes on to say: "Nihil enim honestum esse potest, quod iustitia vacet," and concludes the paragraph by remarking: "Itaque viros fortes, magnanimos, eosdem bonos et simplices, veritatis amicos, minimeque fallaces, esse volumus: quae sunt ex media laude iustitiae." As I have pointed out elsewhere (*Mod. Phil.,* X, 573 ff.), Jonson's 'valor' was the Stoic 'fortitude,' and as the latter must be characterized by justice, so must the former.

When saying that Crites strives rather to be judicious than seem so, Jonson is expressing a thought like that in *Epigram* cix:

Thou rather striu'st the matter to possesse,
And elements of honor, then the dresse,

and may in both cases be indebted to Cicero, *ibid.*:"Vera autem et sapiens animi magnitudo honestum illud, quod maxime natura sequitur, in factis positum, non in gloria, iudicat: principemque se esse mavult, quam videri." The same idea, however, is in Aeschylus, *Seven against Thebes,* 591 [581], as quoted by Plutarch (Transl. 1870, I, 210-211) with reference to Aristides.[2] So in Aristotle, *Nic. Ethics,* the high-minded man will "care for reality more than for reputation" (Welldon's' transl., p. 117).

In III, ii, 19 ff., Hedon says of Crites: "Gods precious, this afflicts mee more then all the rest, that wee should so particularly direct our hate, and contempt against him, and hee to carrie it thus without wound, or passion! 'tis insufferable." Seneca tells us, *De Contumelia,* x, 3: "sapiens a nullo contemnitur. magnitudinem suam novit . . . et omnis has, quas non miserias animorum, sed molestias dixerim, non vincit, sed ne sentit quidem." The whole of this tract of Seneca is built up on this fundamental doctrine of the Stoics, and elsewhere he gives frequent expression to this and to related ideas.

While we are on the subject of the invulnerability of the sapiens, it will be worth while to observe that a number of the lines in the Apologetical Dialogue affixed to the *Poetaster* have their source in Seneca.

---

[2] For the frequency of the 'antithesis of seeming and being' in classical literature, see the note on the passage in Aeschylus in T. G. Tucker's ed. of the *Seven against Thebes,* 1908. He quotes Sallust, *Cat.* liv, esse quam videri bonus malebat.

> The *Fates* haue not spun him the coursest thred
> That (free from knots of perturbation)
> Doth yet so liue, although but to himselfe,
> As he can safely scorne the tongues of slaues;
> And neglect *Fortune,* more then she can him.
> It is the happiest thing, this not to be
> Within the reach of malice; It prouides
> A man so well, to laugh of iniuries:
> And neuer sends him farder for his vengeance
> Then the vex'd bosome of his enemy.
> I, now, but thinke, how poor their spight sets off,
> Who, after all their waste of sulphurous tearmes,
> And burst-out thunder of their charged mouthes,
> Haue nothing left, but the vnsau'ry smoake
> Of their blacke vomit, to vpbrayd themselues:
> Whilst I, at whom they shot, sit here shot-free,
> And as vn-hurt of enuy, as vnhit.

All this is pure Seneca in thought. Compare the whole of the *De Contumelia*, but more particularly the following passages: IX, 3: "caret autem perturbatione vir erectus . . . caret autem ira sapiens, quam excitat iniuriae species, nec aliter careret ira nisi et iniuria, quam scit sibi non posse fieri: inde tam erectus laetusque est, inde continuo gaudio elatus." I, 2: "Stoici virilem ingressi viam . . . curae habent . . . ut quamprimum nos eripiat et in illum editum verticem educat, qui adeo extra omnem teli iactum surrexit, ut supra fortunam emineat." VIII, 3: "Non habet ubi accipiat iniuriam. ab homine me tantum dicere putas? ne a fortuna quidem . . ." X, 4: "haec vero minora ne sentit quidem nec adversus ea solita illa virtute utitur dura tolerandi, sed aut non adnotat aut digna risu putat." XII, 3: "Non immerito itaque horum contumelias sapiens ut iocos accipit." III, 3: "Involnerabile est non quod non feritur, sed quod non laeditur: ex hac tibi nota sapientem exhibebo." In this last case, to be sure, Jonson has altered the thought slightly, but in its original form he employs it in the *New Inn* (see the article referred to above) and in *Underwoods* xliv.

One or two other borrowings in this dialogue may be mentioned. When in l. 37 Jonson speaks of the absurdity of those who think that all are aimed at, still are struck, he is expressing metaphorically the constantly recurring idea of Seneca that though enemies may attempt to injure the wise man, yet he does not feel those injuries. When in ll. 165-6 he says that it is a feminine humor and far beneath the dignity of a man to pursue these temporal plagues, he may have in mind, in addition to the lines from Juvenal mentioned by Gifford and Mallory, such a passage as *De Clementia,* I, v, 5: "magni autem animi est proprium, placidum esse tranquillumque et iniurias offensionesque superne despicere. Muliebre est furere in ira," for in the next two lines, where he says that to revenge injuries is to confess you feel them, he is certainly making use of *De Ira,* III, v, 8: "Ultio doloris confessio est" (which he also used in the *Sejanus*).

III, iii, consists entirely of a long soliloquy by Crites, of which I give here the parts that are of special interest:

Doe, good *detraction,* doe, and I the while
Shall shake thy spight off with a carelesse smile.
* * * * * * * * * * *
What should I care what euery dor doth buzze
In credulous eares? it is a crowne to me,
That the best iudgements can report me wrong'd;
Them lyars; and their slanders impudent.
Perhaps (vpon the rumour of their speeches)
Some grieued friend will whisper to me, Crites,
Men speake ill of thee; so they be ill men,
If they spake worse, 'twere better: for of such
To be disprais'd, is the most perfect praise.
What can his censure hurt me, whom the world
Hath censur'd vile before me? If good Chrestvs,
Evthvs, or Phronimvs, had spoke the words,
They would haue moou'd me, and I should haue call'd
My thoughts, and actions, to a strict accompt
Vpon the hearing: But when I remember,
'Tis Hedon, and Anaides: alasse, then,
I thinke but what they are, and am not stirr'd.
* * * * * * * * * * *
That talke (as they are wont) not as I merit:
Traduce by custome, as most dogges doe barke,
Doe nothing out of judgement, but disease,
Speake ill, because they neuer could speake well.[8]
And who'ld be angry with this race of creatures?

---

[8] For Marston's reply to this passage, cf. Small, *War of the Theatres,* 1899, 106. It would be interesting to know whether Marston is simply imitating Jonson, or whether he had the same passages of Seneca in mind. As they are among the Senecan fragments, he may not have known them.

What wise physician haue we euer seene
Moou'd with a frantike man? the same affects
That he doth beare to his sicke patient,
Should a right minde carrie to such as these:
And I doe count it a most rare reuenge,
That I can thus (with such a sweet neglect)
Plucke from them all the pleasure of their malice.
For that's the marke of all their inginous drifts,
To wound my patience, howsoe're they seeme
To aime at other obiects: which if miss'd,
Their enui's like an arrow, shot vpright,
That, in the fall, indangers their owne heads.

The sentiment of the first two lines is identical with one that we have already considered. The greater part of the rest of the speech is merely an expansion of some passages from the *De Remediis Fortuitorum Liber* (this exists only in fragments; for those in which we are interested, see the Teubner edition, III, 450).

" 'Male de te opinantur homines.' Sed mali: moverer, si de me Marcus [Cicero, si] Cato, si Laelius sapiens, si alter Cato, si Scipiones duo ista loquerentur: nunc malis displicere laudari est. Non potest ullam auctoritatem habere sententia, ubi qui damnandus est, damnat.

" 'Male de te loquuntur.' Moverer, si hos iudicio facerent: nunc morbo faciunt. non de me loquuntur sed de se.

" 'Male de te loquuntur.' Bene enim nesciunt loqui. faciunt non quod mereor, sed quod solent. quibusdam enim canibus sic innatum est, ut non pro feritate sed pro consuetudine latrent."

A similar idea, more succinctly stated, occurs in *Ep.* 113, 32: "et tunc, si sapis, mala opinio bene parta delectet."

In ll. 32 ff. other material from Seneca is employed. *De Cont.*, XIII, 1-2: "quis enim phrenetico medicus irascitur? quis febricitantis et a frigida prohibiti maledicta in malam partem accipit? Hunc affectum adversus omnis habet sapiens, quem adversus aegros suos medicus." *De Ira*, I, xv, 1: "Corrigendus est itaque, qui peccat . . . . sed sine ira. quis enim cui medetur irascitur?" *De Cont.*, XVII, 4: "Adice quod genus ultionis est eripere ei, qui fecit, factae contumeliae voluptatem . . . . adeo fructus contumeliae in sensu et indignatione patientis est.

The same sentiments as those that Crites expresses are also uttered by Horace in *Poetaster*, V, iii, 471 ff.:

Enuy me still, so long as *Virgil* loues me,
Gallvs, Tibvllus, and the best-best *Caesar*,

My dear *Mecoenas*: while these, with many more
(Whose names I wisely slip) shall thinke me worthy
Their honour'd, and ador'd societie,
And reade, and loue, proue, and applaud my *poemes;*
I would not wish but such as you should spight them.

So in Ind. to Act I of *Every Man out of his Humour.*

Ll. 37 ff. contain the same thought as some lines in the passage quoted earlier from *Poetaster.* For the simile in 43-4, Jonson may be indebted to Lyly, as Judson suggests, but as for the whole idea, both here and in the *Poetaster* passage, we may profitably compare, for instance, Plutarch, *How to Profit by our Enemies,* u. s., I, 285: "And here may be inserted that wise and facetious answer of Diogenes to one that asked him how he might be revenged of his enemy: The only way, says he, to gall and fret him effectually is for yourself to appear a good and honest man." And on p. 287: "These are allowable returns, and the most cutting strokes you can give your enemy; there being nothing that carries in it more vexation and disgrace, than that scandalous censures should fall back upon the head of him who was the first author of them."

In V, vi, 37-8, Arete says:

for the heauens
Receiue no good of all the good they doe.

She is echoing a Stoic sentiment, as in *De Ben.,* IV, ix, 1: "plurima beneficia ac maxima in nos deus confert sine spe recipiendi, quoniam nec ille collato eget nec nos ei quicquam conferre possumus."

In V, xi, 130 ff., Crites says:

But there's not one of these, who are vnpain'd,
Or by themselues vnpunished: for vice
Is like a furie to the vicious minde,
And turnes delight it selfe to punishment.

Seneca, *De Ira,* II, xxx, 2: "et iam sibi dedit [poenas] qui peccavit." *Ibid.,* III, xxvi, 2: "maxima est enim factae iniuriae poena fecisse, nec quisquam gravius adficitur quam qui ad supplicium poenitentiae traditur." *Ep.* xcvii, 14: "Prima illa et maxima peccantium est poena, peccasse nec ullum scelus . . . impunitum est, quoniam sceleris in scelere supplicium est." So Plutarch, *Of the Tranquillity of the Mind, ibid.,* I, 165: "Whereas, on the contrary, the being conscious of having done a wicked action leaves stings of remorse behind it, which, like an ulcer in the flesh, makes the mind smart with perpetual wounds," and in a note we are referred to Euripides, *Orestes*, 396.

Even in his dedication Jonson is not far away from Seneca, for when he says, "For, to grace, there should come reuerence; and no man can call that louely, which is not also venerable," he certainly had in mind *Ep*. cxv, 3: "quanta esset cum gratia auctoritas! nemo illam amabilem, qui non simul venerabilem diceret."

The interest possessed for the student of Jonson by these cases of borrowing does not lie merely in the fact that a certain number of items have been added to the long account of the poet's indebtedness to the classics. Two other points of view are more fruitful, because they afford a survey of larger aspects of his work and perhaps a clearer insight into the man himself and his relation to his age. In the first place, there is the very interesting question of the value and meaning of the Stoic ethic for Jonson himself and incidentally for his period, in itself a phase of the still larger question of the amalgamation of pagan philosophy with Christian thought that took place in the days of Elizabeth. This question, however, I do not propose to take up here. At the moment I desire merely to state the principle of interpretation that will eventually be found most useful in coordinating the multifarious phases of his intellectual activity.

We rank Jonson, and rightly, among our great dramatists, our great critics, and our great satirists. Yet to understand the man himself and the functions that he conceived himself to fulfill, we must not start from the conception of him as an author, or as a man of letters, or even as a poet in the usual sense. The key to the problem lies in the old doctrine of the *vates*, the poet-moralist, the poet-teacher. In classical literature there was embodied a very large amount of valuable thought,—thought which the world should not let die, since it was indispensable to the art of life. No doubt some men read and studied the classics diligently. Yet such men were after all elected spirits. Few perhaps of those that were fluent in the Latin and Greek really applied to the conduct of life the lessons taught by men of old times out of their great experience and their constant reflection. There were few who could divest an idea of its classical associations, and save for their own use or for that of others its really valuable portion, its essential element of permanent truth. And for most men, learning being in such a degenerate state, the classics were a book sealed with seven seals. The translations that lay at their disposal gave them, to be sure, the ancient authors in an English dress so far as mere language was concerned, but there was need of a more thorough, more far-reaching process of adaptation. Classical thought had developed in a pagan civilization and one which, besides being pagan, was fundamentally different in point of view, in social organization, in manners and customs. It was not easy for the ordinary Englishman to hypostatize the ancients and to conceive of them as real beings living and acting in a real world. Classical thought, then, if it were to be of direct use to modern times, must be as it were mediated, reinterpreted, in such a way as to be readily absorbed by the English reader, just as though it were a native product; it must be made a part of his intellectual atmosphere. The reverse of a formal process of exposition was demanded. Neither translation nor treatises would serve the turn. Hence, though perhaps without any consciously formulated purpose, Jonson set himself to read, mark, and inwardly digest the classical authors. In his own phrase, he concocted, divided, and turned all into nourishment, and as a result, *eius studia abierunt ciuium in mores.* I believe Jonson would have accepted this description of his literary activity, and I find few phases of that activity that may not be more readily understood by reference to it.

The second question is of a different, though of a related character. Who was Crites? In dealing with the War of the Theatres some scholars identify Jonson and Crites without hesitation, but others are more conservative. Though realizing that Jonson often speaks through the mouth of Crites and that a certain parallelism may be found between the situation of Crites at Court and Jonson's own situation, yet some of us feel a natural reluctance to believe that Jonson could have intended to say of himself all of the things that he says of Crites. Certainly it was a defect of his character that he was in a measure arrogant, that he knew perfectly well and admitted freely that he was a man of great talents and great learning. But Camden and Selden, for all his abilities, would have had little use for a man who meant Mercury's description of Crites, delivered on the public stage, to be understood of himself. Fletcher and Beaumont would have thought him simply ridiculous. He would have been no literary dictator, but the laughing-stock of all the wits. His pride in his own achievements would not then have been regarded by his friends as a pardonable 'Roman infirmity,' meriting at worst an indulgent smile or an occasional witty sally. That his enemies should misunderstand him was to be expected. Therein they found their principal weapon of attack.

In other words, we accept, more or less consciously, a distinction that seems not to be often stated, but which if recognized from the beginning would perhaps have prevented much controversy and many pseudo-identifications. It is one thing to say that a character in a drama represents or embodies a living person. It is another to say that the dramatist in creating the character made use of certain facts of the given person's experience. There are characters, too, which represent individuals only at certain stages in the working-out of the action, but not as regards the play as a whole. The impersonation may even take place only once in the course of the action. In none of these cases, which I make bold to say represent Elizabethan practice in general (there are of course exceptions), can the character be said to impersonate except momentarily, by fits and starts, and in no such case should we speak of the character as identified with the person except for the moment. We may accept an identification when everything in the character can be explained by examining the person, and when nothing in the person is inconsistent with the features of the character (given the standpoint of the creator), provided always that there is in the first place some reason for suspecting identity and that there are no considerations external to the play that make it unlikely or impossible.

Crites, then, is not Jonson except as Jonson in depicting him and his situation utilized facts of his own experience and in flattering Elizabeth and demanding preferment for himself spoke through his mouth. Crites is the Stoic *bonus vir*, the *sapiens*, the ideal man, presented under conditions of Elizabethan court-life because Jonson is satirizing certain features of that life, and figured as a scholar and poet because here as throughout his career Jonson is fighting the battle of the scholar and poet. Crites is poor not so much because Jonson is himself poor, but because scholars and poets are always poor, as they have told us from the beginning of recorded time and as they still tell us. A marked acerbity in the utterances of Crites, foreign to those of the true *sapiens* of Seneca, is accounted for by Jonson's own habits of vigorous speech. In a slightly different point of view, Crites represents the social group to which Jonson belonged, and in portraying him Jonson made him conform to the ideal which the great ethical system of the Stoics had evolved.

It follows, then, that I cannot altogether agree with Professor Baskervill's interpretation of the figure of Crites in his *English Elements in Jonson's Early Comedy*. In the first place, his parallels with Aristotle (pp. 261-2) must be superseded by the parallels with Seneca given above, more especially in view of the fact that Crites is constantly quoting from Seneca and that the similar attitude toward detractors assumed in the *Poetaster* (and elsewhere) draws so much from the Stoic writer.

That Jonson had no hesitation in mingling Stoic and Peripatetic doctrine I have illustrated in the article previously referred to, but I see no reason for supposing that in the character of Crites Aristotle had any particular share.[4] Moreover, when Professor Baskervill says, p. 246, that "the ultimate source of Jonson's ethical ideas must have been Aristotle," I think that the statement is mistaken both as regards this play and as regards Jonson's ethical teaching in general, which, despite borrowings from Aristotle and Plato and occasionally others, is basically Stoic and more especially Senecan, that is insofar as its ascertainable classical sources are concerned.

Nor can I go with Professor Baskervill in his treatment of Crites as "the ideal social and courtly type" (p. 258, cf. also 22, note, and 260). Crites is not the ideal courtier, and I see no reason for supposing that had Jonson undertaken to draw such a character, he would not have formed him in general like Il Cortigiano, or perhaps, using a concrete model, like Sir Philip Sidney. Crites represents the social group to which Jonson belongs, and in so doing possesses such qualities as the ideal man should possess in whatever walk of life. To suppose that Jonson in proposing the ideal courtier deliberately deprived him of all advantages of rank and fortune, advantages which Seneca himself does not disdain, though he inculcates a particular position to be taken toward them, and which Aristotle considers of very great importance, advantages which, it is perfectly obvious, the courtier must possess in order to enjoy influence and authority under the social conditions of the time, is I think to mistake Jonson's attitude toward matters of that kind.

In other words, Professor Baskervill goes, it seems to me, altogether too far in laying such stress as he does upon the 'democratic' feeling that he thinks runs through *Cynthia's Revels* (cf. pp. 22, 261). I see no hostility to the Court, but merely to the abuses that fastened themselves upon it. Jonson was certainly aristocratic and monarchical in feeling and belief. His democracy, if we must use the term, consisted in believing that in the best court the door should not be shut entirely upon persons of merit. Social or political equality in the ordinary sense I do not believe that he claimed for them. When he seems to do so for himself, the claim is rather the expression of the force and vigorous independence of his own character than of any social theory.[5] It must not be forgotten that Jonson was entitled to write himself gentleman, and that his family bore arms. No such person, according to the traditions of the English system, was a proper subject for any great man's contempt. Of course, Jonson, like practically all thinkers of his own and earlier days, believed in the principle of *virtus vera nobilitas*, but this belief did not make him any more than the others, democratic in feeling; it did not even make him an aristocrat in the etymological sense of the word, for he does not anywhere show that he desired a social reorganization on that basis. He despised the populace; he believed in class rule; he believed in good blood, good name, social rank; but these things should in the individual be incentives to the pursuit of virtue; when they were abused, the offenders deserved castigation. In all this he was a man of his time, and no more a democrat than anyone else.

---

[4] There are, to be sure, certain similarities between Crites and the high-minded man, but they are also to be found in the *sapiens*.

[5] And doubtless it is partly due to the fact that Jonson was a poet and considered that the poet, who, as the *vates*, practised an almost sacred profession, was

The doctrine, *virtus vera nobilitas*, can of course be found in early Greek thought and can without the slightest difficulty be traced down through Roman, mediaeval, and Renaissance times into the Elizabethan and modern period. As a political principle, it was utilized in order to account for the origin of rank and to open a door, other than that of wealth, intrigue, and favoritism, through which the aristocracy could be recruited from below. As an ethical and social principle, it served to maintain the standing of the upper orders, to incite them to the proper fulfillment of their duty to society, and from this point of view it was crystallized into the maxim, *noblesse oblige*. But it had *per se* no more to do with democracy and democratic feeling than had the Christian doctrine that all men were equal in the sight of God, who would punish and reward without reference to earthly rank. To assert any such connection would be to ignore the history of the principle, to mistake a verbal for a real resemblance, and to reflect conceptions and beliefs of the present day back into the minds of those who did not entertain them.

---

especially worthy of honor. For that reason, among others, Crites should not be scorned. Neither poets nor kings are born every year, like sheriffs. Both deserve equal reverence. And compare *Discoveries*, ed. Schelling, p. 31: "I have ever observed it to have been the office of a wise patriot, among the greatest affairs of the State, to take care of the commonwealth of learning. For schools, they are the seminaries of State; and nothing is worthier the study of a statesman than that part of the republic which we call the advancement of letters." There is nothing democratic in demanding honor for Crites or for himself on such grounds as these.

BRYANT'S "A PRESENTIMENT" AND GOETHE'S "DER ERLKÖNIG"

WILLIAM HERBERT CARRUTH

(One phase of Professor Flügel's catholic taste was his interest in American literature, for which he manifested a really remarkable appreciation. In the very year of his death he was gathering material for a revision of his *Die nordamerikanische Litteratur,* a supplement to Wülker's *Geschichte der englischen Litteratur.* Accordingly there may be an especial appropriateness in including in a volume devoted to his memory this slight note on Bryant's relation to Goethe.—W. H. C.)

FROM AN accomplished translator who was at the same time scrupulous to acknowledge his indebtedness to other authors when he was conscious of it, it seems surprising that a poem with so striking a resemblance to Goethe's "Der Erlkönig" as Bryant's "A Presentiment" should have come without any note of the relationship. Before discussing this relationship, let us place the two poems side by side.

A PRESENTIMENT

"Oh father, let us hence—for hark,
A fearful murmur shakes the air;
The clouds are coming swift and dark;—
What horrid shapes they wear!
A winged giant sails the sky:
Oh father, father, let us fly!"

"Hush, child; it is a grateful sound,
That beating of the summer shower;
Here, where the boughs hang close around
We'll pass a pleasant hour,
Till the fresh wind, that brings the rain,
Has swept the broad heaven clear again."

"Nay, father, let us haste—for see,
That horrid thing with horned brow,—
His wings o'erhang this very tree,
He scowls upon us now;
His huge black arm is lifted high;
Oh father, father, let us fly!"

"Hush, child;" but as the father spoke,
Downward the livid firebolt came,
Close to his ear the thunder broke,
And, blasted by the flame,
The child lay dead; while dark and still
Swept the grim cloud along the hill.

William Cullen Bryant (composed 1836).

DER ERLKÖNIG

Who rides so late in the night-wind wild?
It is the father and with him his child;
He gathers the boy well into his arm,
He clasps him close and he keeps him warm.

"My son, why dost hide thy face and cling?"
"Father, dost thou not see the Elfin-king,—
The Elfin-king with his crown and train?"
"My son, 'tis a streak of the misty rain."

(Come hither, thou darling, come go with me!
Fine games I know that I'll play with thee;
Flowers many and bright do my meadows hold,
My mother has many a robe of gold.)

"O father, dear father, and dost thou not hear
What the Elfin-king whispers so low in mine ear?"
"Calm, calm thee, my boy, it is only the breeze
As it rustles the withered leaves under the trees."

(Wilt thou go, bonny boy, wilt thou go with me?
My daughters shall wait on thee daintily;
My daughters around thee in dances shall sweep
And rock thee and kiss thee and sing thee to sleep.)

"O father, dear father, and dost thou not mark
The Elf-king's daughters out there in the dark?"—
"I see it, my child; but it is not they;
'Tis the old willows nodding their heads so gray."

(I love thee! Thy beauty it charms me so;
And I'll take thee by force if thou wilt not go!)
"O father, dear father, he's grasping me,—
The Elf-king has done me an injury."

The father rides swiftly,—with terror he gasps,—
The groaning child in his arms he clasps;
He reaches the castle all spent and sped;
But alack! in his arms the child lay dead!

Johann Wolfgang Goethe; translation of Martin
and Aytoun, modified.

The identity of theme and method are so complete, I take it, as to make argument almost unnecessary. A father, caught in a thunderstorm with a terrified child, who imagines supernatural enemies in cloud and wind; the child appealing for haste and protection; the father attempting in vain to quiet the child by natural explanation of the imagined terrors; the child, at the end of the storm, dead in its father's arms.

The method: dialogue, with a minimum of narrative. The differences here: that Goethe's ballad begins with a stanza of narrative, and introduces the fancied seductions of the storm-spirit as a third person in the dialogue. Moreover, Goethe's method is otherwise more dramatic, giving four speeches to each: father and child; while Bryant's speeches are longer, and but two to each. By omitting the verses spoken by the Erlkönig (and to make this easy I have given them additional indentation), the similarity of method is more obvious, as well as the almost equal length of the two poems: twenty-two lines in "Der Erlkönig" and twenty-four lines in "A Presentiment."

A vital difference, from the artistic point of view, is the rationalistic interpretation of the episode and the child's death in Bryant, contrasted with the vague horror which it is Goethe's purpose to arouse. In "Der Erlkönig" the child may have been ill to begin with and have died of that illness, or it may have died of fright, or the death may have resulted from some element in the storm. Goethe probably did not intend us to have a clear answer to the question. Bryant's poem is in a way a criticism of Goethe's. A translation it certainly cannot be called; rather a version with an interpretation. It seems to me undeniable that it is based on "Der Erlkönig," and inconceivable that it was not consciously so based.

It is not the pride of an "international literary detective" which prompts to this note, but rather the opportunity it offers to remark on Bryant's scrupulous care to acknowledge his literary indebtedness in general and to suggest an explanation for the absence of such acknowledgment in the present case.

It was Bryant's habit to supply his poems with notes explaining their origin. Thus on "The Burial Place": "The first half of this fragment may seem to the reader borrowed from the Essay on Rural Funerals in the fourth number of the *Sketch-Book.* The lines were, however, written more than a year before that number appeared." On "The Hurricane": "This poem is nearly a translation from one by Jose Maria de Heredia etc." Or again, on "Love and Folly": "This is an imitation rather than a translation of the poem of the graceful French fabulist." I find nowhere any comment on the poem here under discussion, either by Bryant or by his biographers or editors. Yet as I have said, I assume that he cannot have been unaware of the relation of his poem to "Der Erlkönig."

On the other hand, there can be no question of 'plagiarism.' Bryant was too wholly honest to give room for such a suspicion, and too intelligent, if he had not been honest, to dream that the connection would not be seen. Accordingly it must be assumed that he regarded the case as peculiar in not calling for the acknowledgment of relationship. "A Presentiment" is a rationalistic criticism on "Der Erlkönig." As such the latter poem and its theme become raw material to the author of the former. Bryant would not have dreamed of undertaking an artistic improvement on Goethe's work. But it must have occurred to him to show by illustration that the real phenomena of a real storm were adequate to produce an artistic ballad without the romantic 'blauer Dunst' of elfin superstition.

For my own part, it seems to me that an acknowledgment was due to Goethe, even on this assumption, and the omission of it does not seem to accord with Bryant's character and practice. If my impression is right on this point, there is no other explanation of the omission than neglect due to oversight or postponement.

ON SHAKESPEARE'S "JULIUS CAESAR"

WILLIAM CHISLETT, JR.

To H. M. AYRES' view of Shakespeare's *Julius Caesar* as "a gradual evolution of the braggart Caesar from its direct prototypes—the Hercules of Seneca and the Ajax of Sophocles" (*New Variorum Shakespeare, Julius Caesar,* 1913, pp. xi, 397-9), and J. C. Allen's conception of the great Roman as a picturesque hero staged to amuse Elizabethan audiences (id., p. 395), I wish to call attention to two further aspects of a still deferred solution.

I think (1) that in the dramatic figure of Caesar Shakespeare satirized the historical Caesar by making him a conventional pseudo-Senecan hero; and (2) that in his characterization he embodied "our histories'" and his audiences's presumably patriotic feelings against the ancient invader of Britain.

In support of (1) we note that in the plays of Shakespeare in which the Senecan influence is detected (see Cunliffe's *The Influence of Seneca on Elizabethan Tragedy*) Shakespeare is in the main intuitively Senecan, not pseudo-Senecan. Again, portions of the clown scenes in *The Midsummer Night's Dream* burlesque pseudo-Senecan drama; as also Falstaff in 1 Henry IV, II, iv: "I must speak in a passion, and I will do it in King Cambyses' vein." I think in *Julius Caesar* Shakespeare satirized false Senecanism not less intentionally, but less obviously. Pseudo-Senecan-like, Caesar is "drunk with the name of Caesar." Like Tamburlaine and Cambyses he is pompous and thrasonical; but whereas they are unintentionally ridiculed, he is purposely exaggerated.

In support of (2), one recalls the patriotic passage in Cymbeline II, iv, 20-33, in which Posthumus says,

> "Our countrymen
> Are now more order'd than when Julius Caesar
> Smiled at their lack of skill, but found their courage
> Worthy his frowning at."

But the words that were music in the ears of loyal Elizabethans were the Queen's, III, 1, 16-33. (See W. G. Boswell-Stone's *Shake-*

spere's Holinshed, p. 11, where the Queen "scornfully appraises the value of that 'kind of conquest which Caesar made here' "):

> "Remember, sir, my liege,
> The kings your ancestors, together with
> The natural bravery of your isle, which stands
> As Neptune's park, ribbed and paled in
> With rocks unscaleable and roaring waters,
> With sands that will not bear your enemies' boats,
> But suck them up to the topmast. A kind of conquest
> Caesar made here; but made not here his brag
> Of 'Came, and saw, and overcame': with shame—
> The first that ever touch'd him—he was carried
> From off our coast, twice beaten; and his shipping—
> Poor ignorant baubles!—on our terrible seas,
> Like egg-shells moved upon their surges, crack'd
> As easily 'gainst our rocks; for joy whereof
> The famed Cassibelan, who was once at point—
> O giglot fortune!—to master Caesar's sword,
> Made Lud's town with rejoicing-fires bright
> And Britons strut with courage."[1]

The Queen's unfairness here to Caesar (even Holinshed is fairer: see Dowden's *Cymbeline,* Arden Shakespeare, p. xx) becomes Shakespeare's and his audience's and "our histories' " (Geoffrey of Monmouth's and Matthew of Westminster's) bias[2] in Julius Caesar, and for the same reason: expression is given to British resentment against the Roman invader, whose ambition did not end with the sea, but extended even to the Invulnerable Isle.

Now Professor Boas says truly (*Shakespere and His Predecessors,* p. 458), "Allusions elsewhere (than in *Julius Caesar*) to the great dictator as 'mightiest Julius' and 'broad-fronted Caesar' prove that Shakespeare did not under-estimate the man whose place in the sphere of action is perhaps the closest parallel to his own in the sphere of intellect." *Cymbeline* itself has appreciative references to Caesar. Indeed Holinshed, when he deals with the Roman invasion of Britain, gives Caesar's side and "our histories'." But when he comes to the French, the Scotch, the Welsh and the Irish, he displays "a stolid insular spirit"; which leads

---

[1] Sidney Lee quotes the first seven lines of this passage in his *Shakespeare and Patriotism.* (Critic, XXXVIII, 535, 1901.)

[2] See Dowden, p. xx.

Miss Christabel Forsyth Fiske to say further (*A Study of a Feature of 16th Century Conventionalism as it Reveals Itself in Holinshed's Chronicle*, ch. ii, *Holinshed's Provincialism*): "He is quite incapable of comprehending that another man's view may be tenable; or that truth, honor and magnanimity can possibly exist in any nation hostile to the English." Shakespeare's source for *Julius Caesar* is Plutarch; but he was saturated with Holinshed. I believe, then, that when he created Julius Caesar he took over "our histories'" prejudices and assimilated Holinshed's general spirit of intolerance towards any nation hostile to Britain. Caesar was a tyrant, an enemy to liberty and an ancient foe of England. Why should Shakespeare glorify him to an Elizabethan audience? "Are we to conclude," says Boas, p. 459, "that Shakespeare deliberately intended to turn Caesar into a laughing-stock for the benefit of the groundlings in the Globe?" I think not; for Shakespeare's satire of Caesar is not so broad as Professor Boas' question implies. In fact M. W. MacCallum, *Shakespeare's Roman Plays and Their Background*, 1910, p. 226, goes so far as to say, "The impression Julius Caesar makes on the unsophisticated mind, on average audiences and the elder school of critics, is undoubtedly an heroic one." The truth lies somewhere between these extremes. Shakespeare did satirize Caesar, but subtly; how far his audience appreciated the satire we may only surmise. If Shakespeare and his company presented Caesar as Mr. Allen thinks—a picturesque hero to amuse Elizabethan audiences—the satirical intent was apparent to most; if more heroically, as actors commonly interpret him today, the satire was apparent to the more intelligent portion of his audience. In either case I believe Shakespeare conceived Caesar in a spirit of Elizabethan loyalty.

To summarize the two views: I think that Shakespeare embodied in Julius Caesar, in a satirical pseudo-Senecan characterization, an Elizabethan and a British conception of the great Roman whose vaunting ambition presumed even to subdue Britain.

LITERARY SOURCES OF GOETHE'S "URTASSO"

WILLIAM A. COOPER

THE PURPOSE of this paper is to offer a revised list of the literary sources of the first version of the first two acts of Goethe's drama, *Torquato Tasso*. For brevity's sake this early version may be referred to as the *Urtasso*.

It is well known that for the final version of the drama the poet made very large use of Serassi's *La vita di Torquato Tasso* (1785), which fell into his hands on his first Italian journey, and is the only source book he mentions specifically in connection with the drama. There are a great many reminiscences of Serassi scattered throughout the whole play, including even the first two acts.

Since the *Urtasso* has not been preserved, so far as we know, and virtually every motive of the drama that had its source in some printed document, rather than in Goethe's own experience, can be found in the text or the footnotes of Serassi, as well as in the earlier works usually cited as Goethe's sources, it is a difficult task to determine just what were the motives of the *Urtasso,* and how thoroughgoing was Goethe's revision of these two acts. Scholars are quite generally agreed, however, that the main theme of the first act was the coronation of Tasso by the Princess Leonora, and the main theme of the second act was the challenge which all but resulted in a duel in the palace.

The first of these themes was invented by Goethe, who expressly made it prefigure the poet's later coronation at the Capitol in Rome, which, as we know, was actually planned and was only prevented by the poet's untimely death. At the time when the first conception of the drama was assuming shape in Goethe's mind we find him sending to Wieland a laurel wreath as an unworded expression of what he deemed the poet of *Oberon* to have deserved. Thus we see Goethe both perceiving and perpetuating the poetical side of life, a process which may with profit be followed through the whole history of the writing of our drama. How he was making of the *Urtasso* a vehicle to convey his love messages to Frau von Stein we know from many of the contemporary billets-doux which he dispatched to that beloved lady.

The only motives of the first act of the finished drama for which any literary source might have been needed are the love relation between Tasso and the Princess, and the jealous attitude of the Secretary of State Antonio toward Tasso. The love relation was the chief theme of the regular Tasso-legend, and Goethe retained it even after Serassi had characterized it as legendary. The original delineation of the jealous courtier was later, no doubt, considerably retouched, to make the character more closely resemble the historical portrait drawn by Serassi. That there was a character corresponding to Antonio, but called by some other name, in the *Urtasso,* would hardly be questioned nowadays, in spite of Kuno Fischer, whose elaborate theory may be clever argument, but certainly is not convincing proof. We know from manuscript evidence that the secretary was not always called Antonio, having been previously known as Battista Pigna, and he must even have had a still earlier name, for Goethe could hardly have made the acquaintance of Pigna before he read Serassi. The essential thing is that Tasso had a powerful enemy at court, and this fact Goethe must have known, as we shall see, even before Serassi's biography was published.

The plot of the second act of the finished drama results naturally from an intermingling of the love motive and the jealousy motive of the first act. About the only feature of the action for which a literary source would perhaps seem necessary is the breaking of the peace of the palace by Tasso, and its painful consequences, and this is directly traceable to the world-popular, though more or less legendary, account of Tasso's duel in Ferrara, which made his reputation as a swordsman equal to, if not greater than, that as a poet.

The first question that now presents itself for our consideration is, where did Goethe become acquainted with the Tasso-legend? Or to be more specific, what did he read that left him with the distinct impressions, (1) that a love relation had actually existed between Tasso and Princess Leonora, (2) that Tasso had had a powerful enemy at court, (3) and that, one day, in the palace, in a fit of anger, he drew his sword and challenged a supposed enemy to a duel, with the result that he himself was thrown into prison?

As Goethe made a careful study of historical sources before writing *Götz* and *Egmont,* it would only seem natural to suppose that he would study the chief source of the Tasso-legend, Manso's *La vita di Torquato Tasso* (1600-1621), before undertaking to write a Tasso-drama. He himself told what books he used for *Götz* and *Egmont,* but he nowhere mentions Manso in connection with *Tasso,* never speaks of him at all, in fact. For this and other reasons it has long seemed to me unnecessary to suppose, with the overwhelming majority of writers on *Tasso,* that Goethe based the *Urtasso* on Manso. He could have found all the source material he needed in other works which there is some evidence that he read.

To mention but one of the few criticisms in which the Manso-theory is questioned, Vollmer says, in *Goethes Torquato Tasso, erläutert und gewürdigt* (2te Aufl., Leipzig, 1909), p. 85: "Dafür, dass Goethe bei der ersten Bearbeitung das von Kopp als Quelle zitierte Werk Mansos, des Zeitgenossen und Freundes von Tasso, selbst gelesen, wie die meisten Erklärer, auch Düntzer und Fischer, annehmen, habe ich keine sichere Spur gefunden." Apparently Vollmer's only reason for not discarding the Manso theory entirely was the fact that Goethe's lines 1048 ff. are evidently based on one of Tasso's madrigals cited by Manso. But he is careful to remark that such a slender basis for the whole theory is "schwerlich zum Beweise genügend" (p. 28). Even assuming that lines 1048 ff. were a part of the prose *Urtasso,* Vollmer's slight difficulty can be entirely removed by reference to Heinse's essay on Tasso, in the *Iris,* where we find the substance of the madrigal incorporated, with the same interpretation as that adopted by Goethe.

As there is then no evidence whatever that Goethe ever read Manso, let us eliminate his *Vita di Torquato Tasso,* hitherto almost universally accepted as Goethe's first authority, from the list of the *Urtasso* sources, and examine the record of Goethe's study of Tasso to see what we can find to replace Manso.

His acquaintance with the Italian poet began at an early age. In the second book of *Dichtung und Wahrheit* he says that there was a copy of Kopp's translation of the *Jerusalem Delivered* in his father's library, which he industriously read and partly memorized.[1] It was only natural that he should read the book, as Tasso was a favorite author of his father. How deeply his childish spirit was affected by certain scenes of the *Jerusalem* he tells us in an autobiographical passage in the ninth chapter of *Wilhelm Meisters theatralische Sendung* (seventh chapter of the *Lehrjahre*), where we also learn that he early made an unsuccessful attempt to adapt his favorite scenes to the puppet stage. In a letter to his sister from Leipzig (December 7, 1765) he recommends to her that she read the *Jerusalem,* if she can make it out,—meaning the original. In another letter to her (May 28, 1766) he quotes "le clinquant du Tasse" from Boileau's ninth satire (173-176), and says that Boileau is a man who can mold our taste, a thing which can never be expected from a Tasso. Four months later (September 27) he touches on the same subject again and speaks of the *Jerusalem* as a very Gothic work which one ought not to read without a good deal of attention and discernment, in order not to acquire a bad taste by admiring Tasso even to his faults. To this advice he joins a passage from Boileau's criticism of the *Jerusalem* in *L'art poëtique* (III, 210 ff.). In the same letter he asks his sister whether she would advise anybody to learn English from Milton and Young, Italian from Tasso and Ariosto, and German from Gesner and Klopstock. In a later letter (May 11, 1767) he expresses delight that his sister has undertaken to defend Tasso, and quotes, in defense of Tasso, against the criticism of Boileau, thirty lines from Marmontel's *Epître aux poëtes sur les charmes de l'étude,* to the sentiments of which he subscribes in the hope of making peace with both his sister and Tasso. No further evidence is necessary to establish beyond question young Goethe's familiarity with the *Jerusalem Delivered,* in the original as well as in translation.

---

[1] *Versuch einer poetischen Uebersetzung des Tassoischen Heldengedichts genannt: Gottfried, oder das Befreyte Jerusalem, ausgearbeitet von J. F. Koppen,* Leipzig, Breitkopf, 1744. This translation appears as No. 85 of the octavo volumes in the catalogue of Goethe's father's library, printed after his death for the auction sale of August 18, 1794.

We assume as a matter of course that Goethe read Kopp's introduction to his translation of the *Jerusalem.* In that introduction we read (beginning on p. xv, if we supply the wanting pagination): "Das Jahr hernach kam er [Tasso] wieder zurück nach Ferrara, und liess das Hirtengedicht, *Amyntas* genannt, daselbst zum ersten ans Licht treten, wodurch er sich die Ehre der Erfindung der sogenannten Pastorellen oder Schäferspiele zuwege gebracht hat. Allein nunmehro bahnte ihm die Liebe allmählich den Weg zu den grossen Widerwärtigkeiten, die ihm durch einen grossen Theil seines Lebens begegnet sind, und endlich gar seinen frühzeitigen Tod nach sich gezogen haben. Er verliebte sich nämlich in ein vornehmes Frauenzimmer, Leonora genannt, und hielt wegen Ungleichheit des Standes seine Liebe so geheim, dass man auch nicht einmal gewiss weiss, wer diese Leonora eigentlich gewesen ist, indem etliche auf die Prinzessinn von Ferrara, des Herzogs Alphonsens leibliche Schwester, andre wiederum auf eine Gräfinn von *Sanvitale,* und endlich auch auf eine Kammerfräulein obgedachter Prinzessinn, Namens Leonora, muthmassen. Es mag nun aber eine Person, welche es wolle, von diesen dreyen gewesen seyn, wiewohl die Meynung derjenigen, die auf die Prinzessinn Leonora denken, der Wahrheit am nächsten zu kommen scheint, so ist gewiss, dass die Gemüthsverwirrung,

in welche Tasso nach der Hand gerathen ist, und die durch Entkräftung seines Leibes sein Ende befördert hat, von dieser unglücklichen Liebe herrühret. Es mochte nämlich einer von den ferrarischen Hofleuten, mit welchem Tasso in vertrauter Freundschaft gelebet, etwas zu viel von dem Liebesgeheimnisse seines Freundes geredet haben, und dieses nahm der beleidigte Dichter so übel auf, dass er sich in der Burg des Herzogs seinem gewesenen Vertrauten die an ihm begangene Treulosigkeit mit bittern Worten vorwarf, und ihm endlich gar in der Hitze einen Schlag ins Gesicht versetzte. Der andere forderte ihn hierauf heraus, und Tasso hielt sich im Zweykampfe so tapfer, dass er nicht nur seinen Feind schwerlich verwundete, sondern auch, als wider Treu und Glauben drey Brüder seines Gegners an dem Gefechte wider ihn Theil nahmen, sich gegen alle viere so lange wehrte, bis sie von einer Menge Volks, welche darzu kam, von einander gebracht wurden. Dieses muthige Bezeigen unsers Poeten brachte ihm nun zwar überall einen neuen Ruhm zuwege, indem man öffentlich sprach: dass Tasso im Degen nicht weniger, als in der Feder, unüberwindlich wäre; allein da er hierauf auf Befehl des Herzogs, nachdem seine Widersacher entwichen, und ihre Güter eingezogen worden waren, in Verhaft genommen wurde, um, wie Alphonsus vorgab, ihn wider alle fernere Nachstellungen in Sicherheit zu setzen, so nahm dieses Tasso, welcher nicht anders glaubte, als ob der Herzog von seinem Leibesgeheimnisse Nachricht bekommen, und desswegen eine so grosse Ungnade auf ihn geworfen hätte, dergestalt zu Herzen, dass er in eine ausserordentliche Traurigkeit und Angst gerieth, welche endlich zu einer öftern Verwirrung seines Verstandes ausschlug, und ihn in einen bejammernswürdigen Zustand versetzte. Wenige Zeit zuvor, nämlich im Jahre 1574, hatte er im 30. Jahre seines Alters *das befreyte Jerusalem* zu Stande gebracht, und grosse Ehre damit eingelegt, nichts destoweniger aber auch verschiedene Widersacher gefunden, die ihm in sehr bittern Schriften die grössten Fehler in diesem Heldengedichte zeigen wollen."

This passage gives the gist of the part of the regular Tasso-legend covering the particular period of Tasso's life with which Goethe's drama is concerned. The love relation is narrated in such a striking way that Goethe retained its essential features even after Serassi had sought to relegate it to the realm of fiction. To be sure, in the finished drama we find only two of the traditional three Leonoras, the third having been completely stared out of countenance by the critical Serassi. The duel is given considerable prominence, but we find as Tasso's opponent, instead of the jealous Antonio, a gossiping courtier who has betrayed Tasso's

love secret. As this opponent journeys incognito through most of the pre-Serassian literature on Tasso, we do not know by what name he was called in the *Urtasso*. In another passage of Kopp's introduction, not quoted here, he refers briefly to the famous controversy over the comparative greatness of Tasso and Ariosto. This motive is skillfully employed by Goethe at the very beginning of the hostile relation between Tasso and Antonio.

The next literary document which we have every reason to believe young Goethe read is one that has hitherto escaped the attention of scholars. In one of Wolfgang's Leipzig letters to his sister he says that his father's library contained a copy of the *Jerusalem* in the original. In the auction catalogue of the library already referred to I found as numbers 44 and 45 of the duodecimo volumes the two volumes of the *Gerusalemme liberata* published in Venice in 1705. By reference to Serassi's bibliography I discovered that with this edition was regularly bound in at the end of the second volume a copy of the *Vita di Torquato Tasso, scritta dal Cavalier Guido Casoni.* Without doubt this 27-page essay was the first biographical account of Tasso's life in Italian that fell into young Goethe's hands, and we may safely assume that he read it.

Casoni draws upon Manso for the few incidents he relates from the life of his hero, and his own contributions are in the nature of attempts to explain the poet's madness. He credits Tasso with great fortitude in adversity and counts him no less distinguished for his perfect habits and his complete self-control than for his great writings. He makes him out beloved of men, but not of fortune. His theory, that Tasso's melancholia is the natural accompaniment of his superior intellect, he supports by the authority of Aristotle, Democritus, and Plato. The divine fury he considers essential to the poetic faculty. The theory of humors is adduced to explain how Tasso's love for Leonora led to his madness. But while the poet's fancy was admittedly deranged, his intellect is said to have remained clear, a state set forth as in harmony with the theories of Aetius, Avicenna, and others. Finally, Tasso is portrayed as having become sane again before his death.

This essay was well calculated to confirm the impression made by Kopp's introduction, that Tasso's love for the Princess Leonora was the source of his many sorrows.

The theory that Goethe's chief source for the *Urtasso* was Manso presupposes that when he read essays on Tasso that referred to Manso as the chief original authority on which they were based he must have secured a copy of Manso and studied it. Now Kopp says on the first and second pages of his unpaged *Vorrede:* "Das Leben des Tasso hat sein vertrauter Freund, Johann Baptista Manso, Marchese di Villa, umständlich beschrieben; noch weitläuftiger aber ist die Lebensbeschreibung, welche ein ungenannter Franzose (der nach des Crescimbeni Berichte der Abbé de Charnes seyn soll) unter dem Titel: *La vie du Tasse, Prince des poëtes Italiens,* à Paris, 1690 und 1695 in 12 herausgegeben hat." It is just as reasonable to suppose that Goethe read this biography as that of Manso, in view of what Kopp says of the two. If we had any documentary evidence that Goethe actually read this book it would be an easy matter to point out in it all the source material he would have needed for his *Urtasso.* But we are forced to leave this work off the list of sources, along with Manso, till some documentary evidence is brought forward to warrant including it.

The third and last biographical essay to be included in our list is Heinse's *Das Leben Tassos,* which appeared in installments in the first two numbers of Jacobi's *Iris,* October and November, 1774. It is easy enough to understand why Kopp's introductory essay should have been neglected by so many scholars. His book is so scarce that few investigators have ever seen a copy. The reason for neglecting Heinse is different. Hermann Grimm saw significance in the *Iris* essay as a means of refreshing Goethe's memory on the chief points in the life of his spiritual kinsman of the Italian Renaissance. However, Grimm thought that from this reading sprang at once the conception of our drama, and it is little wonder that such utter disregard of documented chronology caused the would-be all-Goethe-knowing Düntzer to fly into a rage and submerge Grimm's thought in a deluge of derision. It was only after Goethe had become involved in his love affair with Frau von Stein and had been appointed a member of the Duke's "Conseil" that he began to experience the double conflict, later to be portrayed in *Tasso,* wherein he put to himself the thoroughly characteristic question (*Tasso,* 3422-5):

"Hilft denn kein Beispiel der Geschichte mehr?
Stellt sich kein edler Mann mir vor die Augen,
Der mehr gelitten, als ich jemals litt,
Damit ich mich mit ihm vergleichend fasse?"

Heinse's essay contains some passages that offend against good taste, and is pervaded by too patronizing an attitude toward his supposedly feminine public. But this does not justify Düntzer and others who follow him in saying that Goethe derived nothing for his *Tasso* from Heinse's ladies' journal article. Before dealing with the possible influence of the article on the drama let us take a moment to consider the relation of the two authors to one another.

Before Goethe had met Heinse he had read *Laidion* and had spoken of it in terms of highest praise. After their meeting Heinse spoke of his very friendly associations with Goethe and their discussions of his (Heinse's) works. Goethe's familiarity with the *Iris* needs no proof, and so it goes without saying that he read the Tasso essay.

In the course of Heinse's description of the love relation between Tasso and the Princess we find this statement (57 f.): "Jeder Bewunderer des Tasso muss die Asche dieser Prinzessinn segnen; denn sie ist die Schöpferinn alles des Guten, was wir von ihm haben. Ihr allein, oder, welches einerley ist, seiner Leidenschaft gegen sie haben wir die schönsten Stellen im *Aminta,* und die grössten Reize seiner Armida zu verdanken. Sie war der Hauptgegenstand in seinem Leben, den Geist und Herz in ihm in eine Masse von Feuer zerronnen in dem höchsten Grad empfunden haben, in dem ein Wesen empfinden kann; und nur dergleichen starke Gefühle sind die Quellen, woraus das Genie den Durstigen Erquickung darzureichen vermag."

Heinse says Tasso was loved by everybody at the court, "einen einzigen ausgenommen, der aber der Liebling des Herzogs war, und ihm so viel schadete, als die Liebe aller andern nicht vergüten konnte. Dieser befürchtete, schon vor seiner Ankunft, sein Herr möchte im Umgange mit ihm zu klug zu seinem Nachtheil werden, und mahlte selbst den Hof ihm mit den widrigsten Farben ab, um ihn davon zu entfernen; da dem Herzog auf keine feine Art auszureden war, ihn zu sich zu bitten." A later passage tells how Tasso got even with this minister-favorite of the Duke, by lampooning him in the pastoral *Aminta*: "Er [Tasso] stellte sich selbst in einer Person des Stücks, im Tyrsis vor, und macht eine schöne Beschreibung vom Herzoge, seinem Hofe, sich und seinem Feinde, den er Mopso nennt, und dessen Charakter er in Gegenwart des ganzen Hofs, und seiner selbst, so frey schilderte: Honigworte hat er auf der Zunge, und auf den Lippen ein freundliches Lächeln, aber den Betrug im Busen, und den Dolch unter dem Mantel; und darauf noch erzählte, was er ihm sagte, um ihn vom Hofe zu entfernen." In another passage we read: "Dieser Mann aber, dessen Namen weder er noch einer seiner Freunde und Zeitverwandten für werth gehalten, von der Nachwelt ausgesprochen zu werden, hatte in der Kunst, die grossen Herren zu beherrschen, ausgelernt, die ihm [Tasso] gänzlich unbekannt war; weil man sie, ohne eine Kleopatra zur Grossmutter zu haben, aus Büchern nicht lernen kann, so sehr sie auch dazu die Herren Literatoren anpreisen.

Der Herzog konnte ihn nicht mehr missen. Er war die Seele seiner Regierung geworden, der Ausspäher seiner Vergnügen. . . . Er sammelte zuerst, um ihm den Tasso verächtlich zu machen, alle bittere Kritiken, die über das befreyte Jerusalem, und seine andern Gedichte und Schriften, von Neidern gemacht wurden, und wusste, sie gelegentlich, während seiner Gefangenschaft und Abwesenheit, eine nach der andern, oder wenigstens das bitterste daraus, dem Herzoge mitzutheilen . . . Nach des Tasso Ankunft erzählte er, wie von ohngefehr, er hab' ihn auch gesehn und gesprochen, als er eben von der Prinzessinn gekommen sey, und Mitleiden mit ihm gehabt, und brachte darauf, nach einigen gutherzigen stechenden Wörtern, im besten Ton, über seine traurige Gestalt, dem Herzoge bey, dass er vor Liebespein ein wenig den Verstand verlohren habe; er hoffe aber, in der ferrarischen Luft ihn bald wieder hergestellt zu sehn. Alles dieses musste seine Wirkung thun."

The essay has much more to say about the love affair, and the court enemy, also a good deal about the friend who betrayed Tasso's secret, the violation of the "Burgfrieden," the resulting duel, and the "room-arrest," as well as the comparison between Tasso and Ariosto, and the preparation for the coronation of the poet at the Capitol in Rome.

From all this it must be clear to anybody approaching the subject with an open mind that we have before us an account, fanciful, to be sure, and showing the author squinting an eye at his lady readers, as he writes German Storm and Stress into the Italian Renaissance,—but, after all, an account containing every essential element of what must have been the plot of the *Urtasso*. The love affair is portrayed as sincere on both sides and the Princess becomes for Tasso the inspiration of his most striking creations, just as Frau von Stein was for Goethe. The Antonio motive is elaborately introduced in the person of the nameless minister.

Kopp, Casoni, and Heinse furnished Goethe with all the source material he needed for the *Urtasso*.

THE USE OF *STARE* IN HORACE SAT. I, 9, 39 AND JUVENAL I, 149

JEFFERSON ELMORE

THE PASSAGE from Horace is as follows:

> Ventum erat ad Vestae, quarta iam parte diei
> Praeterita, et casu tunc respondere vadato
> Debebat; quod ni fecisset, perdere litem.
> 'Si me amas,' inquit, 'paulum hic ades.' 'inteream, si
> Aut valeo stare aut novi civilia iura:
> Et propero quo scis.' 'dubius sum quid faciam' inquit.

The poet in passing through the forum is beset by a stranger who happens at the moment to have a case pending in court and who begs Horace to assist him. The latter is unwilling, giving as a reason inteream si . . . valeo stare. The late Professor Verrall, in a paper on this passage,[1] reached the conclusion that *stare* offered so many difficulties that it ought not to be retained in the text. He proposed accordingly to read *ista re,* or (using the shortened form of the pronoun) *sta re,* taking *valeo ista* (*sta*) *re* to mean, "I am competent in this affair of yours." The proposal is most ingenious, but can hardly be right. *Ista re* does not so much express the quality in which the speaker is competent as the object toward which his competency is directed, and in normal Latin would require *in* or *ad* with the accusative. Read in this way the text also acquires a pronounced tautology, being only a more general statement of novi civilia iura. While one can not, therefore, accept Verrall's brilliant suggestion, he will agree that *stare* is in need of further elucidation.

In the current explanations the endeavor is made to apply here a particular conception of the act of standing,—I mean standing as the opposite of sitting, reclining, etc., which, though common, is not the only form which the idea may assume. The scholiast of Cruquius, who is followed by several modern editors,[2] takes the matter in quite literal fashion, understanding Horace to mean that he can not endure the exertion of standing during the trial. This physical delicacy is inconsistent with the et propero quo scis of the following line; and moreover there is nothing in our knowledge of the Roman courts which warrants the belief that Horace would have been obliged to stand. Others,[3] apparently following the lead of Heindorff, have given to standing in court the technical sense of appearing as an advocate. *Stare* is thus equivalent to *adesse,* and this is, indeed, the service which the stranger asked Horace to perform. It is not clear, however, that *stare* can have this meaning, the only authority being two passages in Plautus,[4] which are themselves capable of a different interpretation. Even if this were not the case, the only result would be to convict Horace of having said the same thing twice in the same line. With respect to the courts *stare* does nevertheless possess a technical meaning, that of appearing as a party to a suit. This point was first elaborated by Roby[5] in a paper called out by Verrall's emendation, and is substantiated by quotations from Cicero[6] and the legal writers.[7] Roby accordingly maintains that Horace is here expressing his inability to be a party to the suit. This would seem almost a reduction to absurdity. Horace was not and could not be a party to the stranger's suit. Why, then, make a point of refusing to be present in this character?

---

[1] *Stare* in Horace, Sat. I, 9, 39, *Journal of Philology,* XIII, 56 f., reprinted in "Studies in Greek and Latin Scholarship," 354 f.

[2] Krüger, Schütz, Kiessling, Rolfe, Morris.

It seems evident that *stare* here requires a different conception of standing, and this I think may be found in regarding it as the opposite of being in motion on the feet—the other fundamental way of looking at this particular act. The opposition may be emphasized as in standing still or standing fast, or it may consist merely in ceasing from motion, as in stopping or coming to a halt. This relation finds expression in the semasiology of both the English 'stand' and the German 'stehen,' and I wish to show that this is also the case with *stare,* which has thus acquired the force of *consistere.* The matter has been much neglected by the lexicographers. In the first place we find *stare* meaning 'to be stationary,' as in Cic. Acad. ii, 123: caelum, solem, lunam, stellas, supera denique omnia stare censet, neque praeter terram ullam rem in mundo moveri; and 'to stand firm,' as in Livy xxii, 60, 25: cum in acie stare ac pugnare decuerat, in castra refugerent. These meanings presuppose that of *consistere,* but the latter is itself found even in the earlier language of Comedy. Cf. Plaut. Amphytr. 276: ita statim stant signa, neque nox quoquam concedit die. Id. Merc. 872: Eu. sta ilico. Ch. male facis properantem qui me commorare, Ter. Phorm. 190: sta ilico. The usage apparently does not occur in Cicero or Caesar; of later writers it is found most frequently in Tacitus, who has at least a half dozen examples; in fact it seems to be congenial to the rhetorical spirit of the early empire. Thus Seneca, Oed. 585: gelidus in venis stetit, haesitque sanguis, Pliny Epp. vii, 3: nescit enim semel incitata liberalitas stare. Juvenal iii, 290 (of the footpad): stat starique iubet. Tacitus, Agr. 16, 23: seditio sine sanguine stetit. Id. Hist. iv, 67, 11: Sequanorum prospera acie belli impetus stetit. Id. An. iii, 72, 11: Seianum extulit tamquam labore . . . eius tanta vis unum intra damnum stetisset.[8] Id. An. xii, 22, 14: unde ira Agrippinae citra ultima stetit. Gellius xiv, 5 (Androclus and the lion): Hunc ille leo ubi videt procul repente quasi admirans stetit, ac deinde sensim atque placide . . . ad hominem accedit. Arnobius, i, 45: cuius ex levi tactu stabant profluvia sanguinis, et immoderatos cohibebant fluores. Id. iii, 44: quare si vobis liquet . . . in unius proloquii finibus convenit vos stare. nec per varias . . . sententias fidem . . . derogare. These quotations, which could be increased in number by a more diligent search, are sufficient to show that *stare* in the sense of *consistere* is a well authenticated usage.

---

[3] Cf. Orelli, Duentzer, Palmer.

[4] Men. 799, Rud. 1101.

[5] *Journal of Philology,* XIII, 233 f.

[6] Quinct. 25.

[7] Gaius iv, 185. Ulpian in Dig. ii, 11, 4, 1. Dig. xlv, 1, 81.

It is this use of the word which I think should also be recognized in the passage from Horace. It is clearly what Porphyrio had in mind when he glossed *stare* with *expectare*,[9] the latter being equivalent to *consistere* plus the delay which the idea of stopping may always imply. This view also permits *valeo* to be taken in its characteristic connotation of an inner or moral ability.[10] Physically Horace can stop for the trial if he so desires, but there are considerations which render his doing so out of the question. He is in no position to tarry, one reason for which he gives in et propero quo scis. This latter statement is no longer inconsistent with *stare*, but stands in a logical relation to it. Indeed the use of *propero* is especially appropriate in that it serves actually to reveal the significance of *stare* as the opposite of its own; otherwise, even the Roman reader might have misunderstood. In Plaut. Merc. 872, already quoted, there occurs a similar conjunction of these two words. Finally it may be claimed that this interpretation gives to the text a consistent and straightforward meaning. Horace refuses to aid the stranger for two reasons: (1) he is in no position to stop for the trial, inasmuch as he is going in haste on another errand; (2) he knows nothing at all about the civil law.

---

[8] Cf. Hist. iii, 53, 7. An. iii, 75, 11.

[9] Porphyrio ad loc. Hoc Horatius dicens negat se posse eum expectare.

[10] Krebs-Schmalz, Antibarbarus, ii 648, Uebrigens liegt in valeo nur das virtuelle können, die innere Kraft haben, imstande sein etwas zu vollbringen, dagegen in posse das active, können, wo die Möglichkeit stattfindet etwas auszurichten.

We may now consider whether a similar conception lies back of Juvenal i, 149:—

> Nil erit ulterius quod nostris moribus addat
> Posteritas, eadem facient cupientque minores:
> Omne in praecipiti vitium stetit. Utere uelis.

This passage has had much the same history as the one from Horace. It was Palmer who proposed to deal with *stetit* by emendation, making the line read

> Omne in praecipiti vitium est. eia utere uelis,

but this correction (unlike Verrall's) has not even cleverness to recommend it. Juvenal's general idea, the extreme prevalence of vice in his time, is clear enough. In his edition of 1839, Heinrich interpreted *in pracipiti* as "auf dem höchsten Gipfel," in which he was followed by both Friedländer and Mayor. In this view vice stands at the top of an eminence and is thus shown at the climax. But when the eminence is called *praeceps,* it also implies the idea of descent. Taking this fact into account, H. Richards [11] suggested an altogether new rendering: "All vice stands on a sheer descent," or as Wilson translates, "vice always stands on a steep incline." The point of this, as Richards explains, is that "once start and you soon reach the bottom. We have already reached it, and posterity can go no further." This is supposed to be supported by such passages as Sen. Ep. 97, 10: non pronum est tantum ad vitia sed praeceps, and Sen. Dial. iii, 7, 4, where the philosopher speaks of vitiorum natura proclivis. It will be noted that in the older view climax is represented by being at the top of an eminence; in this later one, by being at the bottom. Moreover, the presence of vice at the latter point is only an inference from its perilous position on the incline. Such indirection is of course foreign to Juvenal, and we may also acquit him of attributing to vice the folly of attempting to stand on a sheer descent with the inevitable consequence of rolling to the bottom.

These vagaries of interpretation I venture to think result from the narrow conception of *stare* which we have already considered. It seems hardly possible that *stare* in its ordinary sense could ever be made to fit appropriately into this context. If, however, it be taken in the well-established sense of 'to stop,' 'come to a stand,' difficulties of all kinds vanish. We are relieved of the very questionable gnomic perfect which must otherwise be assumed for *stetit*. We can also see just how Juvenal conceived the climax of the vice of his day: It was not under the figure of something that had been high, or that was lying low; vice was a creature which moved forward and which stayed its steps only on the verge of the abyss. The line thus repeats in striking form the nil erit ulterius which introduces the passage.[12]

---

[11] *Class. Rev.* VI, 124-5.

---

[12] I find this view is also taken by Weidner in his edition of 1889 and by Housman in *Class. Rev.* XVII, 467, but neither adduces any evidence.

TRADITIONAL BALLADS FROM ANDALUCÍA

AURELIO MACEDONIO ESPINOSA

I

CALIFORNIA presents a unique field for the student of European Folk-lore. The currents of European tradition which in the future will mingle and make more and more difficult the task of the folk-lorist are at present easily differentiated. The oldest and strongest current is the Old Spanish. Central and Southern California have been for more than two centuries centers of Spanish tradition. During the last thirty years the strongest currents of European tradition have been the Italian and the Portuguese. Recently a new current of Spanish tradition has appeared. Spanish immigrants, of the lower classes, are coming to California in large numbers, especially from Andalucía. The Spanish folk-lorist who in the future will gather Spanish folk-lore in California must distinguish carefully between these two currents of Spanish tradition.

During the last five years I have begun to collect California Spanish Folk-lore in a comprehensive manner, as I collected New Mexican Spanish Folk-lore years before. In my folk-lore expeditions my principal purpose has been to collect the Old Spanish material which came from Spain and Mexico in the XVIIth and XVIIIth centuries. In collecting this material, however, I have not neglected to collect also the Spanish material of recent date, part of which is now published.

Perhaps the most precious material which the Spanish folk-lorist may collect concerns the *Romancero,* or the traditional ballads. The ballad tradition seems to be much stronger in Spain than in Spanish California or New Mexico. My present collection of traditional Spanish ballads gathered from the old California Spaniards is not any more abundant than that collected from the recent immigrants from Southern Spain. The former is, of course, more important in all respects, because it represents an older tradition and a greater diffusion, and like the New Mexican collection[1] reveals the strength and vitality of Spanish ballad tradition as preserved in the most distant and separated regions of the Old Spanish empire beyond the seas.

---

[1] *Romancero Nuevomejicano,* published in *Revue Hispanique,* April, 1915.

II

The Andalusian ballads collected in California follow. They are transcribed as near as possible to the dictated form, using the Spanish alphabet. Since the main features of the dialect of Andalucía are so well known, thanks to the Quintero brothers, it is not necessary to treat of these matters here. As to final *s*, my own observations lead me to believe that it is usually silent before a consonant, but pronounced before a vowel. Some of my reciters, however, pronounced *h* or a distinct final *s* even before a consonant. In the question of juxtaposed vowels I found striking differences between the Andalusian and other Spanish dialects known to me. In Andalusian elision and contraction seem to be much more common than in the New Mexican and California Spanish, where synalepha is the rule, the weaker of the juxtaposed vowels changing so completely as to frequently change into a consonant, e. g. *sabi̯ usté* <SABE USTED,> (Andalusian) *sab' uté.*

Comparative notes are given in III.

I

La Aparición.—A. (Córdoba.)

—¿Ande va té, cabayero? ¿Ande va triste de ti?
—Voy en busca de mi esposa, qu ' hase tiempo que la ví.
—Ya tu esposa ya stá muerta; el entierro yo lo ví;
y las señas que yevaba yo te las puedo desí.
La carit' era de seda y los dientes de marfí,
y un pañuelo que yevaba er' un rico carmesí.
Al entrar por el palasio una sombra negra ví.
—No t' asuste, cabayero, no t' asuste tú de mí,
que soy tu querida esposa, que te vengo a despedí.
—Si eres mi querida esposa, echa los brasos a mí.
—Los brasos que yo t' echaba a la tierra se los dí.

2

La Aparición.—B. (Málaga.)

—¿Dónde va, buen cabayero? ¿Donde vas triste de ti?
—Voy en busca de mi esposa, días ha que la perdí.
—Pues tu esposa ya stá muerta; muerta stá, que yo la ví.
La yevaban entre cuatro, los más ricos de Madrí;
y de acompañamiento yeva más de cuatrosientos mil.
El velo que la cubría es de color carmesí;
la caja en que la yevaban toda era de marfí.

3

Lucas Barroso. (Herrera, Sevilla.)

Allá va Lucas Barroso, vaquero de gayardía.
—Suba, suba mi ganado por esas cuestas arriba,
que si algún daño l' hisiere su amo lo pagaría,
con el mejó beserrito qu' hubiera 'n la vaquería,
hijo del toro Pintado y la vaca Gerardiya.
Dios la crió tan ligera, que volab' y no corría.

Por aqueyos atajos de Ronda
Los vaqueros hasen jondas,
cuando suben una cuesta.
Seviya no tiene cuestas,
que todit' es tierra yana.
Buena fruta es la mansana;
nadie la coma con asco.
Una vieja la comió,
y de asco reventó.

4

Altamar. (Herrera, Sevilla.)

El rey moro teniá un hijo que Paquito se yamaba.
Navegando en artas mares se 'namoró de su hermana.
Como no podía ser, cayó malito 'n la cama,
con una calenturita, qu' a Dios le entriega su arma.
Subió 'l padre a visitale,—¿Qué tienes, hijo del arma?
—Padre, una calenturita, que a Dios le entriego 'l arma.
—¿Quieres que te mat' un ave, d' esa que se crían en casa?
—Padre, mátemel' uté; que me lo suba mi hermana.
Como era 'n el verano se lo subió 'n naguas blancas.
Cuando la vió de subí, se levanta de la cama;
l' agarró por la sintura, la tersió sobre su cama.
—Der sielo bajó un castigo, qu' he deshonrado a mi hermana,
un clavel disiplinado y una rosita temprana.

5

Elena.—A. (Víznar, Granada.)

Estaba una niña bordando corbatas,
agujas de oro y dedal de plata.

Yegó un cabayero buscando posada.
—Si mi madre quiere yo le daré 'ntrada.
Le puso la mesa en medio la sala,
cuchíos de oro, cubiertos de plata.
Le puso la cama en el cuartu̯ e la sala,
colchone de hilo, sábana d' Holanda.
A la media noche jué y se levantó;
de las tres qu' había Elena cogió.
Se monta (a) cabayo y se la yevó,
y en el mismo monte, ayí la dejó.
A los veinte años por ayí pasó;
tiró d' una rama y Elena salió.

6

Elena.—B. (Herrera, Sevilla.)

Estab' una niña bordando corbata,
aguja de oro y dedal de plata.
Pasó un cabayero pidiendo posada.
—Si mi madre quiere, yo de buena gana.
Le pus' una mesa en medio una sala,
mantele de hilo, cubierto de plata.
Le pus' una cama en medio una sala,
colchone de hilo, sábana di̯ Holanda.

7

Gerineldo. (Antequera, Málaga.)

—Gerineldo, Gerineldo, Gerineldito pulido,
¡quién te piyara sta noche tres horas a mi albedrío!
—Como soy vuestro criado, señora, burláis commigo.
—No me burlo, Gerineldo, que de vera te lo digo;
qu' a la dié s' acueta 'l rey, y a las onse tá dormido.
Eso de las onse y media el rey pide su vestido;
no 'ncontró quien se lo diera, y al minuto s' ha vestido.
Pidió la 'spada de oro, y entre los dos l' ha metido.
Se levanta la prinsesa tres horas del sol salido.
—Gerineldo, Gerineldo, mira que semo perdido,
que la 'spada de mi padre de testigo l' ha servido.
—¿Por dónde m' iré yo ora, para no ser conosido?

M' iré por esos jardines, cogiendo rosas y lirios.
El rey, como lo sabía, se le hiso apersebido.
—¿Onde vas tú, Gerineldo, tan pálido y descolorido?
—Vengo del jardín del rey, de coger rosas y lirios.
—No lo niegues, Gerineldo; con la prinses' has dormido.
—Tengo 'l testamento jecho con escrito de mi estreya;
mujer qu' ha sido mi dama no m' he de casar con eya.

8

Don Pedro. (Herrera, Sevilla.)

Ya viene Don Pedro de la guerra herido;
y viene con ansia por ver a su hijo.
—Cúremi̭ uté, madre, 'ta(s) sincṷ heridas,
que voy a la sala a ver la parida.
—¿Cómo tá, Teresa de tu felí parto?
—Yo to bien, Don Pedro, si no vienes malo.
—Arrímam' el niño, que le di̭ un abraso,
por si acaso muero, no muerṷ a su lado.
A lo cuarenta paso Don Pedro 'spiró;
se quedaron los corasone traspasado de dolor.
—Dígam' usté, mi suegra, como buen' amiga,
¿qué ruido es ése qu' hay en la cosina?
—Yo te diré, mi nuera, como grand' amiga,
el juegṷ e los naipe, como stás parida.
Ya complió Teresa lo cuarenta día;
s' etaba peinando para ir a misa.
—Dígam' uté, mi suegra, como grand' amiga,
¿qué vetido me pongo para ir a misa?
—El negro, mi nuera, el negro mi vida;
póntelo de luto, que te combenía.
A l' entrada por l' iglesia la gente desía:
—¡Qué viuda tam beya la resién parida!
—Dígam' uté, mi suegra, como grand' amiga,
aqueya rasone ¿porqué la(s) desían?
Si Don Pedrṷ ha muerto, yo no lo sabía.
Alsó la cortina en grande silensio;
agarró un cuchiyo, se cortó 'l pecueso.
Repiquen campana con mu grande pena,
porque ya s' han muerto Don Pedrṷ y Teresa.

9

Delgadina. (Herrera, Sevilla.)

El rey moro teniá tres hijas, máh bonita que la plata,
y la máh bonita ď eya Delgadina se yamaba.
Estand' un día comiendo su padre la retrataba.
—Padre, ¿qué me mir' uté? ¿qué tengo yo 'n eta cara?
—Que tú ha de sé mi mujé, madrastra de tus hermanas.
—No lo permitan lo sielo, ni la reina soberana,
de qu' oté sea mi padre y yo seá su enamorada.
—Vengan todo mi crīado a Delgadina 'nserrala.
Si pidiere de comé dale de carne salada;
si pidiere de bebé dale sumo de retama.
Al otro día siguiente s' asomó por la ventana;
ha vitṷ a su hermosa hermana sentada 'n siya de plata.
—Hermana, por sé mi hermana, ¿me dier' una taya di̯ agua?
El corasó me se seca y la vida me se acaba.
—Yo te la diera, mi bien, yo te la diera, mi arma;
pero si padre s' entera a las do noh castigaba.
Entró Delgadina p' adentro, que yorando reventaba;
con lágrima de sus ojo toda la sala regaba;
con la trensa de su pelo toda la sala crusaba.
Al otro día siguiente s' asomó por la ventana;
ha vitṷ a su hermosa madre sentada 'n siya de plata.
—Madre, por sé té mi madre, ¿me diera' una taya di agua?
El corasó me se seca y la vida me se acaba.
—Yo te la diera, mi bien, yo te la diera, mi arma;
pero si padre s' entera a lah dos nos enserrara.
Entró Delgadina p' adentro, que yorando reventaba;
con lágrima de sus ojo toda la sala regaba;
con la trensa de su pelo toda la sala crusaba.
Al otro día siguiente s' asomó por la ventana;
ha vitu̯ a su hermoso padre sentado 'n siya de plata.
—Padre, por sé té mi padre, ¿me dier' una taya di̯ agua?
que 'l corasó me se seca y la vida me se acaba.
—Vengan loh reyes d' oriente a Delgadina dar agua;
el que yegare primero con Delgadina se casa.
Por mucho que ligeraron, Delgadina staba muerta.
A la cabesera tiene una fuente di̯ agua clara,
y a loh pies tiene a la reina hasiéndole la mortaja.
La campana de la gloria pa Delgadina tocaban;
la campana del infierno pa la madre y pa l' hermana.

10

Carmela. (Herrera, Sevilla.)

Carmela se paseaba por una sal' adelante,
con los dolore de parto, qu' el corasón se le parte.
—¡Quién se piyar' una cama en medio d' aqueyos vayes!
La suegra que l' ecuchaba:—Corre, véte cá tu madre.
Si viene Pedru̯ a la noche, yo le pondré de sená;
yo le daré ropa limpia si se quiere demudá.
Llegó Pedru̯ a media noche.—Mi Carmela, ¿dónd' etá?
—Siéntate, hijo querido, que te tengo de contá.
Tu Carmel' es una tuna, que m' ha querido pegá.
Ese hijo que tú tiene sabe Dios de quien será.
Monta Pedru̯ en su cabayo, y su trabuco detrá.
Al regolvé d' una 'squina s' ha 'ncontradu̯ a su comadre.
—Buena tarde tenga, Pedro, ya tenemos un infante;
del infante gosaremo, a Carmela Dios la salve.
—¿Carmela levanta ya? —¿Cómo quiere que levante?
Con dos hora de parida ¿hay mujé que se levante?
L' agarraba por un braso, se la montó por delante.
Anduvieron siete leguas uno y otro, sin hablarse.
—Carmela, ¿porqué no m' habla?—¿Cómo quiere que yo hable,
si lo pecho der cabayo van regado de mi sangre?
—Al regolvé d' esa 'squina tengo intensión de matarte.
Un tiro ha sonado, ha sonado 'n esa parte.
¿—Quién s' ha muerto? ¿quién s' ha muerto? —La prinsesa d' Olivare,
responde un niño chiquito, chiquitito de pañale,
—por un farso testimonio que le levantó su madre.

11

Camino de Belén. (Almería.)

Por aquel portiyo abierto, nunca lo vide serrado,
pasó la Virgen María, vestida de colorado.
El vestido que yevaba siempre lo vide manchado,
que lo manchó Jesucristo con sangre de su costado.
Caminemos, caminemos, caminemos pa Belén.
Como el camino es tan largo, pidió 'l niño de beber.
No pidas agua, mi vida, no bebas agua, mi bien,
que los ríos corren turbios y los arroyos también.

Caminaron adelante; pidió 'l niño de comer.
—En las cuestas de San Diego hay un rico naranjel,
que lo guarda un buen sieguito, siego que ni gota ve.
—Dame, siego, una naranja para 'l niño 'ntretener.
—Entre usté, señora y coja las que sea de menester.
Cantimás cogiá la Virgen, más echaba 'l naranjel.
La Virgen, tan cortesana, no cogió nomás de tres;
una le dió a su niño, y otra le dió a San José,
y otra dejó 'n su falda para la Virgen goler.
El siego que nunca vido or' ha comensado a ver.
¿Quién er' aqueya señora que le había hecho tanto bien?
Era la Virgen María, que caminaba pa Belén.

12

La Virgen y el Niño Perdido. (Almería.)

La Virgen vistió a su niño con una preciosa tela,
para yevarlo a Belén a selebrar una fiesta.
Se le perdió 'n el camino . . . .
Sus ojos eran dos fuentes que regaban las arenas.
S' encontró con dos mositos, s' encontró con dos donseyas;
les preguntó si habían visto al Redentor de la tierra.
—Dé usté las señas, señora, ...
Puede ser que s' haya visto, o puede ser que se vea.
—Lleva sapatitos blancos y unas moraditas medias,
una túnica encarnada, bordada con seda negra,
que la bordé con mis manos, esta santa cuarentena.
—Ese niño, sí señora, anoche 'stuvo en mi puerta;
pidió limosna y le dí, posada porque quisiera.
Le hise una rica cama, con almuadas de seda.
El niño, tan cortesano, no quiso acostarse 'n eya;
en el rincón más escuro qu' en aqueya casa hubiera.
Otro día por la mañana decía d' esta manera:—
Quedaos con Dios, mositos, quedaos con Dios, donseyas.
¡Qué mi padre os dé buen pago en aqueya gloria eterna!

13

El Niño Perdido. (Herrera, Sevilla.)

—Madre, a la puerta hay un niño más hermoso qu' el sol bello.
Yo digo que tenga frío porque viene medio en cueros.
—Pues, dile que entre; se calentará

porque nesta tierra ya no hay caridá;
porque la qu' había s' ha 'cabado ya.
Entró 'l niño, se sentó; s' hiso que se calentaba.
Le preguntó la patrona:— ¿De qué tierra? ¿de qué patria?
—Mi padre del sielo, mi madre también;
yo baj' a la tierra para padeser.
Hasle la cama (a) este niño en la 'lcoba y con primor.
—No me l' hag' usté señora, que mi cama es un rincón,
que mi cama es el suelo desde que nasí;
y hasta que me muera ha de ser así.
Ante que fuera de día el niño se levantó.
Le dijo a la patronsita:— Usté quedará con Dios.
Con Dios, patronsita, la paga vendrá;
si no esta noche, por la madrugá.
Ante que fuera de día ya 'taba el niño en la puerta,
con una fanega de trigo y en la mano una peseta.
—Tom' usté, patrona, tom' usté, mujer,
tom' usté la paga del anocheser.

III

Inasmuch as I have elsewhere studied in a comparative way some of the ballads mentioned below, I content myself with general references in the notes to those ballads.[2] Owing to lack of space I give complete bibliographical data only in the case of recent works, and those not well known.

1, 2. These are fragmentary versions of a well known traditional ballad, the first versions of which appear in *pliegos sueltos,* and date from the sixteenth century, if not earlier. See *Romancero Nuevomejicano,* Nos. 20, 21, 22; Menéndez y Pelayo, *Tratado de los Romances Viejos,* II, 533-534, and *Antalogía,* X, 53 (Asturian), 24 (Andalusian); Menéndez Pidal, *Los Romances Tradicionales en América* (*Cultura Española,* 1906), No. 17; Milá y Fontanals, *Romancerillo,* 227; Juan Menéndez Pidal, *Poesía Popular,* No. 73; Narciso Alonzo Cortéz, *Romances Populares de Castilla* (Valladolid, 1906), 32-34; Braga, *Romanceiro Geral Portuguez* (3d Ed., 1906), 36-78. In the Portuguese versions the old Spanish ballad is confused and mixed with the ballad *Bernal Francés.*

---

[2] In my *Romancero Nuevomejicano,* prepared in 1913, but published in 1915. Some of my notes need revision and amplification in view of the important American Spanish collections published in the meantime. Additional remarks are also given in my review of the work of Vicuña Cifuentes, mentioned below.

The Cuban version of our ballad is not a traditional version, but of very recent date. See Chacón y Calvo, *Romances Tradicionales en Cuba* (Habana, 1914), 97-100. It is evident that the Castilian versions are the oldest, as Vicuña Cifuentes states in his notes to the ballad of *La Adúltera* (Julio Vicuña Cifuentes, *Romances Populares y Vulgares, recogidos de la tradición oral chilena* (Santiago, 1912), 100.[8] The best version is the Asturian. The two Andalusian versions now published are directly connected with the Andalusian version 24, cited above. See also Menéndez Pidal, *Cat. del Romancero, Jud-Esp.*, 56, and Durán, *Romancero General*, 292.

3. The first version of this ballad was collected by Rodríguez Marín in Osuna (Andalucía) and published by Menéndez y Pelayo, *Antología*, X, 22. Our present Sevillan version is in all respects the same version, with the exception of the last verses, which, though somewhat suspicious, seem to belong to a traditional version. This evidence is derived largely from the fact that the Chile versions have similar verses, although with a change of assonance. See Vicuña Cifuentes, *Romances, Populares y Vulgares*, Nos. 55-59, and my review, *op. cit.*, 54. Cifuentes gives five versions, the first one being the best and longest yet found. It is in this version that the last verses of the Sevillan version now published appear, although in somewhat different language. These are totally lacking in the Osuna version.

4. The first known Spanish version of this ballad of Biblical tradition, was the Osuna version of Rodríguez Marín, published in the *Boletín Folklórico Español*, and reprinted by Menéndez y Pelayo, *Antología*, X, 196-197. While the present Sevillan version is essentially the same ballad, the little differences in language are extremely interesting and valuable for the reconstruction of the original version. In some cases the verses are decidedly different. The substitution of the name Paquito (in the Seville version) and Taquino (in the other) are worthy of note. Taquino for Amón is the first substitution. Paquito was a later substitution. See also the note of Menéndez y Pelayo.

Cortés, *Romances Populares de Castilla*, 109-111, gives three long and interesting versions of the same ballad, but the language does not reveal great interest. All three versions seem to me to be new versions, with the traditional elements fused with more recent additions.

The Jewish version published by Menéndez Pidal in his *Catálogo del*

---

[8] This welcome American Spanish collection of Traditional Spanish ballads is the best collection of popular Spanish ballads made within recent years. See my review in *Bulletin de Dialectologie Romane*, V, 49-54.

Romancero Judío-Español, No. 37, preserves the Biblical names unchanged.

5, 6. In *Antología,* X, 210, Menéndez y Pelayo published the first Spanish version of this ballad, which he supposed to be of Portuguese origin. His words follow: "Es uno de los pocos romances cuyo origen portugués es indudable, puesto que se refiere a la patrona de Santaren, cuya leyenda, tomada de un antiguo Breviario de Évora, puede leerse en el tomo XIV de la *España Sagrada* (389-391). En las provincias de lengua castellana no parece que está muy difundida: yo solamente conozco esta versión leonesa." Since these lines were written we know much more about this ballad. There are two forms of the same ballad, one in octosyllabic verses and the other in six-syllable verses. The Leonese version of the *Antología,* as well as the Castilian version of Cortés, *Romances Populares de Castilla,* 108, are in octosyllabic verses and belong to a distinct class by themselves. The version of Cortés is by far the best. Menéndez y Pelayo gives references to eight Portuguese versions, and these also divide themselves into the two classes above mentioned. In each class the same assonance prevails, in most cases.

Our Andalusian versions now published, the one from Granada and the other from Sevilla, belong with the Castilian version from Uruguay, published by Menéndez Pidal, *Los Rom. Trad. en América,* No. 27, and the various Portuguese and Galician versions published by Braga, Silvio Romero (see Menéndez y Pelayo), Milá y Fontanals, *Romania,* VI, 52, etc. These are in six-syllable verses, or twelve if we consider the verses as long verses of two hemistiches. The Spanish versions are in many respects superior to the Portuguese versions. There is great similarity, however, and their primary source may be Portuguese, as Menéndez y Pelayo supposes. To me, this supposition is by no means conclusive. The fact that the legend is of Portuguese origin is not evidence that any ballad composed after the legend became known is Portuguese; and the two present Spanish versions from Andalucía, together with the Uruguay version, show that Spanish tradition has a very old ballad in the shorter meter, which does not show any signs of Portuguese origin. The fact that the Portuguese versions have been known before the Spanish versions, has made some scholars believe that these were ballads of purely Portuguese origin. I do not even admit that the shorter meter is only a Galician or Asturian ballad meter.

7. The legend of Gerineldo and the various Spanish ballads that treat of it have received the attention of various scholars. In Spanish ballad tradition the legend is very common, although in some of the best and

most extensive collections recently made the ballad of Gerineldo is conspicuously missing; for example, in the excellent collection of Chile by Vicuña Cifuentes.[4] Generally speaking, however, the ballad of Gerineldo is very common in modern tradition. For a good classification and study of all the Gerineldo ballads known and published up to 1891, see especially Hans Otto, *La Tradition d' Eginhard et Emma dans la poésie romanesca de la Péninsule Hispanique*, in *Modern Language Notes*, Dec. 1892. The diffusion and development of the legend in Spain are studied by Menéndez y Pelayo, *Tratado de los Romances Viejos*, II, 404-406. In addition see, for further study and more versions, Menéndez Pidal, *Cat. del Romancero Jud-Esp.*, No. 101; Durán (old versions), *Romancero General*, 320, 321; Juan Menéndez Pidal, *Poesía Popular*, 3, 4, 5; Braga, I, 177, etc.; Cortés, *Romances Pop. de Castilla*, 5-7; A. Rodrigo de Azevedo, *Romanceiro do Archipelago de Madeira* (Funchal, 1880), 63; Milá y Fontanals, *Romancerillo*, 269; Antonio Castro Leal, *Cuba Contemporánea*, 1914, 239-242; and lastly, *Romancero Nuevomejicano*, Nos. 7, 8, 9, and *Primavera*, 161, 161a.

Our present version from Málaga is incomplete. The Asturian and Andalusian versions given by Menéndez y Pelayo, *Antología*, X, 32-35 and 161-164, are better preserved. The last two verses of the present Málaga version, with a change of assonance, seem to be a late addition. They do not belong to the original ballad, and are probably from another ballad. The same idea, but in different words and assonance, is found in other older ballads, for example Tenderina, *Antología*, X, 47:

—Con esta espada me maten, con esta que al lado traigo,
si mujer que me dió el cuerpo nunca con ella me caso.

In *Primavera*, 139, we have even the same assonance:

—No quiero hacer, caballeros, para mí cosa tan fea,
en tomar yo por mujer la que tuve por manceba.

8. This is a complete and important version of a well known Spanish ballad which is found in Spain in two characteristic forms, the twelve and sixteen-syllable meters. The present version is almost identical with the one from Extremadura published in *Antología*, X, 177-178. Both are variants of the same ballad. The Asturian versions of *Antología*, X,

---

[4] See my review, *op. cit.*, p. 52. In *Introducción*, p. xxv, however, Vicuña Cifuentes speaks of a lost fragment of this ballad.

110-112, Juan Menéndez Pidal, *Poesía Popular,* 47 and 48, Cortés, *Romances Populares de Castilla,* 80-81, are only indirectly related.

These ballads are Spanish versions of the well known legend of *Le Roi Renaud,* celebrated in one of the most popular French *chansons.* The Spanish ballads which continue in Spain this charming legend, together with various Portuguese, Catalonian and even Italian songs or ballads, are directly connected and related with the French *chanson,* which was the source of their inspiration; and the French version of the story is in turn inspired in an Armorican *gwerz.* This last form of the legend is derived from Scandinavian sources which find their origin in old Germanic traditions.[6]

The Spanish ballads, and in particular the Andalusian versions, preserve practically the complete legend. The last verse of the version from Extremadura reminds one of the beautiful and identical verse from the *Chanson de Roland.* Both follow:

—Si don Pedro es muerto, no es razón (que) yo viva.
Quant tu ies morz dulur est que jo vif. 2030

9. This is the most popular ballad of Spanish tradition. The present version is essentially the same as the Andalusian versions published by Menéndez y Pelayo, and mentioned below. The only point worthy of mention here is the fact that the closing verses call the mother and sister to judgment and leave the father unpunished.

The ballad of *Delgadina* reproduces a legend which has a most complicated and extensive history. There are current in European tradition hundreds of tales and songs that treat of one or another form of the legend; and indeed some of the apparently connected versions of the legend or legends may have no connection whatever. The literature on the subject is so extensive that it is impossible to give even a brief summary of the most characteristic forms of the legend. In the Spanish ballads the story is usually the account of a king who falls in love with his daughter, and her subsequent imprisonment and death. Hundreds of Spanish, Portuguese and Catalonian versions of the ballad have been found. The majority of the versions found thus far, and a discussion of these with comparative notes, are found in the following publications: Menéndez y Pelayo, *Antología,* X, 126-131 and 167-176; Juan Menéndez Pidal, *Poesía Popular,* 74, 75 and 76; Menéndez Pidal, *Los Rom. Trad. en Amér.,* 29; and *Cat. del Romancero Jud-Esp.,* 98 and 99; Ciro Bayo,

---

[6] See Menéndez y Pelayo, *Antología,* X, 112-115; G. Doncieux, *Romania,* XXIX, 219-256.

THE MEANING OF *CAELUM* IN THE SIXTH BOOK OF THE "AENEID"

HENRY RUSHTON FAIRCLOUGH

IN THE Sixth *Aeneid,* of which Robert Louis Stevenson once wrote: "one of the most astonishing pieces of literature, or rather it contains the best I ever met with," Virgil takes his readers down to the lower world. Here, guided by the Sibyl, Aeneas sees marvelous sights, and the poet in his own wonderful way describes the entrance to hell, the shores of Acheron with Charon and the ghosts of the departed, the neutral ground where dwell the untimely dead, the Fields of Mourning, the fortress of Tartarus, the Blissful Groves of Elysium, and finally the retired vale by the stream of Lethe, where are mustered the countless spirits of those who are again to live on earth.

In describing this world below, it is obvious that the poet deals with what transcends his own experience. The physical aspects of the other world are actually unknown to him, and he must speak of them in terms of the terrestrial and celestial regions which are known. This may be illustrated by his beautiful account of Elysium. Here in this land of joy are the *amoena virecta Fortunatorum Nemorum,* "the green pleasaunces of the Blissful Groves. Here an ampler ether clothes the meads with roseate light, and they know their own sun, and stars of their own." The blessed ones enjoy, as we on earth do, sun, stars, air, groves and meadows; but they have the glory

"Of all that is most beauteous—imaged there
In happier beauty: more pellucid streams,
An ampler ether, a diviner air
And fields invested with purpureal gleams;
Climes which the sun, who sheds the brightest day
Earth knows, is all unworthy to survey."

This fact, that terms properly belonging to the earth on which we stand, and to the sky at which we may gaze, are sometimes used by the poet in connection with the lower world, has been occasionally forgotten by Virgilian scholars.

Cuentos y Poesías Pop., 274. Our present Andalusian version from Almería is longer and in all respects superior to the others thus far known, and is therefore an important find. The first verses are evidently traditional and belong to the original version, since these are preserved in the fragmentary version from Cuba, published by Carolina Poncet, *op. cit.*, 296, and in the fragmentary verses mentioned by Vicuña Cifuentes; see below. Vicuña Cifuentes, *Romances Populares y Vulgares*, 161-165, gives five versions from Chile, the first two of which are well preserved. Fragmentary versions are also found in Menéndez y Pelayo, *Antología*, X, 216-243; Menéndez Pidal, *Los Rom. Trad. en América*, No. 10; Rodríguez Marín, *Cantos Populares Esp.*, IV, 165; Milá y Fontanals, *Romancerillo*, 3; Cortés, *Rom. Pop. de Castilla*, 121-122. See also the notes of Vicuña Cifuentes, 165-168.

12. This ballad, like Nos. 11 and 13, belongs to a long series of Spanish ballads that narrate various traditional episodes of the life of the Child Jesus and the Virgin. I have not seen any version published that can be compared with it, although some of the versions show a vague relation. See the following notes.

13. Fernán Caballero, *Cuentos y Poesías Populares*, 272-273, gives a ballad which narrates the principal episode mentioned here, but the direct relation between the two versions is not clear. The two may be entirely independent.

Chacón y Calvo, *Romances Tradicionales en Cuba*, 115-116, however, gives a complete and almost identical version. Because the ballad was not to be found in any of the collections consulted, Chacón y Calvo printed the Cuban version, as he states, with suspicion, evidently suspecting the genuineness of the ballad. He need have no fears. Our present version from Seville confirms the authenticity of this traditional ballad. This last version is the best of the two. The Cuban version is so close to the Andalusian that I believe it is not old. It must be a version brought from Andalucía recently, *i. e.*, in the nineteenth century. The form is interesting, since two metres are employed; but this fact is of no consequence here. Much of the ballad material that narrates the episodes of the life of Jesus, the nativity, etc., is of a dramatic character, and the metrical variations are necessary. The two metres used, the octosyllabic and the hexasyllabic, are the two common Spanish ballad metres.

THE MEANING OF *CAELUM* IN THE SIXTH BOOK OF THE "AENEID"

HENRY RUSHTON FAIRCLOUGH

IN THE Sixth *Aeneid,* of which Robert Louis Stevenson once wrote: "one of the most astonishing pieces of literature, or rather it contains the best I ever met with," Virgil takes his readers down to the lower world. Here, guided by the Sibyl, Aeneas sees marvelous sights, and the poet in his own wonderful way describes the entrance to hell, the shores of Acheron with Charon and the ghosts of the departed, the neutral ground where dwell the untimely dead, the Fields of Mourning, the fortress of Tartarus, the Blissful Groves of Elysium, and finally the retired vale by the stream of Lethe, where are mustered the countless spirits of those who are again to live on earth.

In describing this world below, it is obvious that the poet deals with what transcends his own experience. The physical aspects of the other world are actually unknown to him, and he must speak of them in terms of the terrestrial and celestial regions which are known. This may be illustrated by his beautiful account of Elysium. Here in this land of joy are the *amoena virecta Fortunatorum Nemorum,* "the green pleasaunces of the Blissful Groves. Here an ampler ether clothes the meads with roseate light, and they know their own sun, and stars of their own." The blessed ones enjoy, as we on earth do, sun, stars, air, groves and meadows; but they have the glory

"Of all that is most beauteous—imaged there
In happier beauty: more pellucid streams,
An ampler ether, a diviner air
And fields invested with purpureal gleams;
Climes which the sun, who sheds the brightest day
Earth knows, is all unworthy to survey."

This fact, that terms properly belonging to the earth on which we stand, and to the sky at which we may gaze, are sometimes used by the poet in connection with the lower world, has been occasionally forgotten by Virgilian scholars.

Perhaps the best example of this is furnished by the word *caelum*, which Virgil is forced to employ in different senses, according to the context. Thus in v. 724, where Aeneas begins to expound the doctrine of the *anima mundi*, the word *caelum* is used in its ordinary sense, as contrasted with the earth (*terra*), water (*campi liquentes*), the moon (*luna*), and the sun (*Titania astra*). So in v. 849, *caelique meatus* is used of the astronomer's calculations of the courses of the stars through the heaven. Similarly in v. 790,

Hic Caesar et omnis Iuli
progenies, magnum caeli ventura sub axem,

the meaning is: "Here is Caesar, and all the seed of Iulus, destined to pass beneath the sky's mighty vault." The verse refers to the future birth on earth of Caesar Augustus, and his house. It has, however, been misunderstood, so that Servius comments thus: *id est, ad divinos honores;* as if *magnum caeli ventura sub axem* meant "destined to ascend to heaven." Lachmann also understood the words to refer to the apotheosis of Augustus; and even Jackson, in the latest translation of Virgil, gives us "destined to ascend the great cope of heaven." Fairfax-Taylor, too, errs in rendering

"And Caesar and Iulus' race behold,
Waiting their destined advent to the skies."

These mistakes are due to the use of *caelum*, which at once suggests deification; but a moment's consideration is sufficient to show that while *caelum* is undoubtedly the sky or heaven, *ventura sub* places the sphere of action on earth.

There are, however, certain passages where *caelum* is no longer used in its ordinary sense. Thus in v. 719 sq., Aeneas expresses astonishment that souls unborn should have a mad longing for the light,

Quae lucis miseris tam dira cupido?

and asks this question:

O pater, anne aliquas ad caelum hinc ire putandum est
sublimis animas iterumque ad tarda reverti
corpora?

"But, father, must we think that any souls pass aloft to the sky, and return a second time to sluggish bodies?" Here Servius tells us that Virgil mixes poetry and philosophy, *miscet philosophiae figmenta poetica.* The poets understood by *caelum* the upper world, *ut superos intellegamus, id est nostram vitam.* The philosopher, however, would recognize Virgil's phrase as equivalent to *ad caelum reverti.*

However, we need not inquire whether Virgil wished to convey here some esoteric teaching. The poetical meaning of passing to a life on earth is certainly intended, so that for *caelum* in v. 719 we could conceivably substitute *terram. Caelum* in fact, in this passage, implies that to the dwellers in the lower world this earth is their sky, up to which they might cast longing eyes, as to their future home. Doubtless the word is preferable to *terram,* because while the latter implies dead matter, *caelum* suggests the light and air which give life to man.

Near the very end of the book occurs a line, v. 896, in which *caelum* again has this meaning. Of the two gates of Sleep, one is of horn, the other of ivory,

> sed falsa ad caelum mittunt insomnia Manes,

"but false are the dreams sent by the spirits to the world above." Here there is no question that the dreams referred to are sent to those living on this earth, which is the sky or heaven of the Manes, or ghosts.

We are now prepared to consider the meaning of *caelum* in the difficult passage descriptive of Tartarus, vv. 577-581.

> Tum Tartarus ipse
> bis patet in praeceps tantum tenditque sub umbras,
> quantus ad aetherium caeli suspectus Olympum.
> Hic genus antiquum Terrae, Titania pubes,
> fulmine deiecti fundo volvuntur in imo.

As is well known, this passage is based on a verse in *Iliad,* 8, 16,

> τόσσον ἔνερθ' 'Αΐδεω, ὅσον οὐρανός ἐστ' ἀπὸ γαίης·

'as far beneath Hades as heaven is away from earth.' The only real difference here between Virgil and Homer is that the Roman poet doubles the distance, making Tartarus *twice* as far below Hades as earth is below heaven. This is a favorite device of the poets, and Milton tries to improve on both Virgil and Homer, for his fallen angels are

> "As far removed from God and light of heaven
> As from the center *thrice* to the utmost pole."

But the Virgilian passage has caused much trouble. First there is the question as to the precise meaning of *suspectus,* then as to whether *caeli* depends on *suspectus* or on *Olympum,* and lastly as to the use of both *caeli* and *aetherium Olympum.*

The natural meaning to assign to *suspectus* is 'upward look'; but as in *turris erat vasto suspectu,* (*Aeneid* 9, 530), it is virtually 'height,' some have thought that here too Virgil speaks of the height of heaven, the idea being that Tartarus extends downward twice as far as is the distance from the sky's floor to the highest peak of Olympus. Servius glosses the word with *altitudo*. Sidgwick seems to waver between these two possible renderings, and it is to be noticed that Lewis and Short cite our passage for the meaning of "a height" for *suspectus.*

Donatus supposed the meaning to be that the depth of Tartarus below Hades is as great as the height of heaven above Hades; but the Homeric passage leads us to expect a comparison between the distance from Hades to Tartarus and that from earth to heaven. Henry supposes Virgil's meaning to be that "Tartarus is twice as deep below, as heaven is high above, the ground," *i. e.* this earth is the common factor in the comparison. In support of his view Henry cites Silius 3, 483, where the poet has "the Alps ascend as high above the ground as Tartarus descends below."

To assign the secondary meaning of *height* to *suspectus* here, merely on the support of *Aeneid* 9, 530, seems distinctly forced, and it is not surprising that most scholars accept the literal rendering of 'upward look' as sufficient. There still remains a question as to the syntax of *caeli,* which Ladewig connects with *Olympum,* the heavenly Olympus being distinguished from the Thessalian mountain. An interesting view, mentioned by Conington, is that of Petit, a French scholar, who, observing that the verse immediately following, viz., v. 580, mentions the Titans, the sons of Caelus and Gaia (or Terra), conceived the idea of transposing the two words *caeli* and *Terrae,* so that *terrae suspectus* would mean 'the upward look from earth.' Conington's own solution of the difficulty is to take *caeli suspectus* as 'the looking up to heaven,' the words *ad aetherium Olympum* "being added to develop the thought." In this most modern editors follow him. Thus Knapp gives the rendering 'skyward view,' and Sidgwick translates the phrase "the upward look to heaven," and for *ad aetherium Olympum* gives "to the summit of Olympus."

But Sidgwick's objection that, according to this view, the words *ad aetherium Olympum* are "almost superfluous with *caeli*" is not only valid, but also sufficient to condemn the rendering. Page writes: "it is really a view through the sky to heavenly Olympus," *i. e.* from the earth, and with this I agree. This is the meaning that we expect *a priori* to find, in view of the Homeric verse; it is the meaning that Petit would give to the passage by means of a violent transposition; but it is also the meaning which we can find in the words as they stand, and without doing violence to the language. All that is necessary is to recognize in *caeli* another illustration of the use of *caelum* to indicate the world above for those who are in the lower world, namely, this earth; for, as Henry says, "what most distinguishes this world from Hades is the *caelum* which affords it both air and light." Hence the simplest and most correct rendering of our passage is: "Then Tartarus itself yawns sheer down, stretching into the gloom twice as far as is yon sky's (earth's) upward view to heavenly Olympus."

Closely parallel to this use of *caelum* for the earth is that of *aether,* which is sometimes found for *aer.* Thus of the unhappy suicides whom Aeneas saw in Hades, the poet exclaims, *Aeneid* 6, 436 sq.:

> Quam vellent aethere in alto
> nunc et pauperiem et duros perferre labores!

"How gladly now, in the air above, would they bear both want and harsh distress!" The words *aethere in alto* would naturally mean "in the upper ether" or "in heaven"; but again the heaven of Hades is the air we breathe on earth. So of Silvius, the first of the souls to be born, Virgil says (v. 761):

> primus ad auras
> aetherias . . . . surget,

"he first shall rise into the air of heaven." Henry cites similar uses of the word *aether,* as *Aeneid* 1, 587; 7, 65; 8, 701, and comments on Virgil's extreme "laxity of expression," of which perhaps the most striking instance is afforded by *Aeneid* 7, 767-8, where Hippolytus, restored to life, is said

> ad sidera rursus
> aetheria et superas caeli venisse sub auras,

"to have come again to the stars of heaven, and beneath the air of the sky above." Here, after a manner not uncommon in Virgil, the more peculiar expression, which cannot be taken with strict literalness, is followed by one which, though quite poetical, is more precise and has almost the character of a gloss, explanatory of the one preceding. And in this particular case it is to be noted that *caelum* is used in its common and literal sense, the peculiarity lying wholly in *sidera aetheria,* for Hippolytus certainly did not rise as far as the stars of heaven, when he ascended from the shades infernal *ad lumina vitae* (v. 771).

THE AUTHORSHIP OF "TITUS ANDRONICUS"

HENRY DAVID GRAY

THAT *Titus Andronicus* is a genuine Shakespearean play has been the belief of Half-Rome; the Other Half-Rome has risen to vindicate Shakespeare from the reproach of having written such a play; while a wiser Tertium Quid, emphasizing the tradition established by Ravenscroft in 1687, has taken Shakespeare to be the reviser of another's play. The proposal I have to submit is, that Shakespeare was the original author of the piece, and that such un-Shakespearean passages as we find in it are due to the revision of his work by other men.

We are accustomed to think of Shakespeare as having served his apprenticeship in revising older plays. What we ought to have supposed all this time is that the Stratford youth of dramatic bent composed several original and unactable plays before ever he sought his fortune in the world; that he came to London in the hope of disposing of them; and that *his* work was handed over to the established playwrights of the time for *their* revision. Those, other than Shakespeare himself, who have been suggested as possible authors of *Titus Andronicus* are Kyd (proposed by Farmer), Marlowe (by Fleay), Greene (by Grosart), and Peele (by Robertson). A moment's reflection should convince anyone that the work of none of these men would have been handed over for revision to this unknown youth from up Stratford way. If a young man to-day wished to make his entry into the theatrical world, he would write several plays and submit them; but he would not be given the work of Pinero, Jones, Shaw, or Barrie to revise.

It is a presumption by which I am quite willing to stand that if Shakespeare was the original author of *Titus Andronicus*, the main body of the play as we now have it is of his making. The distinctively Shakespearean passages are for the most part inherent in the structure of the drama. Those who cull these finer passages and call them Shakespeare's can only say that here are such lines as so great a poet might well have written; they forget that one does not revise a play by putting into it certain noble passages at haphazard. On the other hand, those parts of the play which are most un-Shakespearean have in every instance a structural explanation for their having been inserted.[1]

The external evidence in favor of Shakespeare's authorship of *Titus Andronicus* is overwhelming. It must be remembered that Heminge and Condell were associated with Shakespeare from the time when this play was produced. These friends and "fellows" of his knew whether or not Shakespeare was the author; and though they were eager to give him all they could, they would scarcely have assigned to him any play which could not with some show of justice be called "his." But while the inclusion of *Titus* in the First Folio implies only that the play was largely Shakespeare's, the mention of it by Meres in 1598 means, I am convinced, distinctly more than this. Meres was an educated man addressing an enlightened audience; he had his facts well in hand,—he even knew of the private circulation of the Sonnets. If he had been governed so completely by his love of sixes as is sometimes said, he had *Henry VI* to choose,—and Shakespeare's claim to very extended passages in this is of course undoubted. The reason why Meres did not include either *Henry VI* or *The Taming of the Shrew* was, I firmly believe, that he knew (and many of his readers would know) that Shakespeare was only the reviser of these plays. If my contention as to *Titus* is right, then Meres' record is clear; he included every play of which Shakespeare was the original author, and, appropriately, none which he had only revised.

The reasons for doubting the direct evidence of those who knew, and who made no other such mistake, must indeed be weighty. Our modern feeling is most in revolt as regards the very subject of the play. It is, as Gerald Massey says, a tragedy of Horror, not of Terror. Professor Dowden adds that on this account it "belongs to the pre-Shakespearean school of bloody dramas. . . . That Shakespeare himself entered with passion or energy into the literary movement which the *Spanish Tragedy* of Kyd may be taken to represent, his other early writings forbid us to believe."[2] But instead of recalling the comedies, as Professor Dowden then does, we should consider only Shakespeare's work in *Henry VI* and *Richard III*, and such later survivals of the Tragedy of Horror as the gouging out of Gloucester's eyes. I am afraid that I can find no inherent unlikelihood in Shakespeare's outdoing Kyd in the bloodiness and horror of his first tragedy, just as he outdoes Lyly in the artificiality of his first comedy. Shakespeare was not only imitative in his earliest works; he was, if I may use the paradoxical expression, creatively imitative. To the twins of Plautus he would add a second set of twins. If Endymion's love may not lead to marriage, and Semele flaunts Eumenides with cutting cleverness, and Sir Topas is a braggart,—then the princess and her three ladies in *Love's Labour's Lost* shall all put off the king and his three lords, and shall twit them with prolonged and outrageous cleverness, while Don Armado and Holofernes are two braggarts.[3] If there were ten good killings to please Andrea's ghost in the *Spanish Tragedy,* then *Titus Andronicus* can show you fourteen murders, three amputated hands, a tongue cut out, a violation, and a banquet of human pie. Some of the most distressing and distasteful of these horrors I shall assign with a very good will to the revisers; but that Shakespeare went beyond the limits of the *Spanish Tragedy* at the time when Kyd's play dominated the English stage, I think the most natural thing in the world. What would not be possible is that he wrote such a play as late as 1594, the date assigned by Mr. Fuller and by those who accept his ingenious but unnecessary theory.

---

[1] The only Shakespearean passage which may be isolated on a structural study of the drama is the scene in which Marcus kills the fly (III, ii); and that this was a part of Shakespeare's work which was omitted by the revisers is indicated by its absence from the quartos and its inclusion by Shakespeare's personal friends in the First Folio.

[2] Shakespeare—His Mind and Art, 48.

Turning from the theme of *Titus Andronicus* to its style, we find no clearly marked consensus of opinion. To begin with the poets, who have here, surely, most right to speak: Coleridge remarks that the metre is an argument against *Titus Andronicus* as being the work of Shakespeare, "worth a score of such chronological surmises,"[4] but he gives him V, ii, 20-60. Swinburne picks instead Act IV, scene iii. Mr. Arthur Symons registers at various passages which are generally brief and always lyrical.[5] Dowden rejects; Gosse accepts. Gerald Massey would have none of it. Mr. H. Bellyse Baildon will take it all.[6] Where the poets differ so among themselves, we are forced to fall back upon the so-called "scientific" tests; and here I come face to face with Mr. John M. Robertson.

Mr. Robertson's book, *Did Shakespeare Write Titus Andronicus?*[7] is an elaborate and pains-taking piece of work, and it is written by a man who knows his early Elizabethan literature with a thoroughness that is quite my despair. Yet I cannot free myself from the impression that Mr. Robertson has been carried away by his theory. We must admit that he gives a striking array of parallel passages between *Titus* and the works of Peele, as well as of Greene, Marlowe, Lodge, and Kyd. I never realized before how much Shakespeare was influenced by these men, and how much they, in turn, took from him. Of course many of the most strikinig of these instances occur in passages which I believe were added by the revisers, and so the cumulative effect of Mr. Robertson's showing is somewhat lost on me. But many other parallels come in passages which I still believe to be Shakespeare's. One cannot ignore these recurrencences of phrase and idea; where they are most frequent we must be most cautious; but I cannot feel that they are anywhere in *Titus* determinative. The only fair way to get the final value of these "echoes" is to match them with the echoes in *Love's Labor's Lost.* If any one will make a list of all the phrases in this comedy which are paralleled in the works of Lyly and show it to be no more than twice as long as Mr. Robertson's assortment of Peele passages in *Titus,* I shall agree on my part to reconsider the problem. Of course we are more accustomed to think of *Love's Labor's Lost* as directly and purposely imitative; but why should we not realize that *Titus Andronicus* was imitative, too?

---

[3] But Holofernes may have been added in revision.

[4] Lectures on Shakespeare, Bohn edition, 304.

[5] Introduction to the Facsimile of the Quarto of 1600.

[6] "Having tried to write nearly every known form of English verse and experimented in new ones, I think I may without vanity claim to be an expert in regard to versification." Arden edition, Introduction, p. lxxviii.

[7] London: Watts & Co., 1905.

Closely akin to the argument from reminiscent images and phrases is the argument based on the "once-used words." Dr. Grosart gives a list of words in *Titus Andronicus* which occur nowhere else in Shakespeare but are used by Greene,[8] and Mr. Robertson applies the test with rigor first to Peele and then to the others of the group. Simpson's table of the once-used words in Shakespeare's plays is still the answer. Here it appears that *Titus Andronicus* contains 196 such words, while *Love's Labor's Lost* (to take the most pertinent example), contains 373.[9] Will not some industrious person kindly hunt through the works of Lyly, with this list in hand, and thus prove for us that Lyly wrote *Love's Labor's Lost?* Mr. Robertson will have it that the table is not to be regarded, because it contains many "parts of verbs of which other parts appear often in other plays," and other words which are not really indicative. This is true enough; but the table treats all the plays in the same way, and is therefore *relatively* significant. *Titus Andronicus* contains fewer once-used words than do the majority of Shakespeare's dramas. By applying this test, who knows but we might prove that Ben Johnson was the author of *Hamlet,* and that Beaumont and Fletcher wrote *King Lear?*

---

[8] Englische Studien, XXII, 417 f.

[9] New Shakespere Society Transactions, 1874, p. 115.

A much more reliable test is that of the "double ending." Mr. Fleay counted these in all of Shakespeare's dramas; and his table[10] shows a decided but by no means a uniform advance, from less than 2 percent in *Love's Labor's Lost* to 35 percent in *The Winter's Tale.* Mr. Fleay's countings were evidently done most hastily, or else he depended upon some careless assistant. He found only 9 double endings in *Love's Labor's Lost,* for example, whereas Mr. Robertson gets 26. I have counted the double endings in Shakespeare's early plays, and find the following percentages.[11]

	PERCENT		PERCENT
Titus Andronicus	7	*Love's Labor's Lost*	5
1 Henry VI	7	*Comedy of Errors*	14
2 Henry VI	10	*Two Gentlemen of Verona*	15
3 Henry VI	10	*Midsummer Night's Dream*	6
Richard III	17	*Merchant of Venice*	14
Richard II	10	*Taming of the Shrew*	14
King John	4	[*Induction*	21]
Romeo and Juliet	9	[*Kath. and Petr.,* scenes	18]

It will be seen from my table that any attempt to base a chronology on these percentages would be preposterous, but also that Shakespeare shows from the very first a strong tendency to employ the double ending. Mr. Robertson, who gets 9 percent of double endings in *Titus Andronicus,* selects *Love's Labor's Lost* and *A Midsummer Night's Dream* to show that the percentage in *Titus* is too high for Shakespeare, and puts forward the claim of Peele on a showing of nearly 7 percent in the first act of *David and Bethsabe* and nearly 6 percent in the first act of his *Battle of Alcazar.* My method of counting only such cases of the double ending as are clear instances of it gives me 4 percent in the first act of *David and Bethsabe* and 1 percent in the play as a whole; whereas there are only four double endings in the first act of *The Battle of Alcazar,* or slightly over 1 percent. Mr. Robertson suggests that the large percentage of double endings in *Richard III* may be due to a part-authorship by Marlowe. But every scene in *Richard III* gives a percentage of double endings far in advance of any play or any scene in any play of Marlowe's undisputed authorship. *Dr. Faustus* contains 2 percent of double endings; *Tamburlaine* between 2 and 3 percent; *The Jew of Malta* 3.5 percent; *Edward II* 3.8 percent; *The Massacre at Paris* less than one and one-half percent; *Dido, Queen of Carthage* (with Nashe) less than one percent. This means that Marlowe *never* employs the double ending as frequently as Shakespeare *always* employs it. The case against Peele is even more decisive. *The Arraignment of Paris* is almost wholly rhymed; I note one double ending in 190 lines of blank verse. *The Old Wives Tale* has only about 150 lines of blank verse, and these yield five double endings. *Edward I* contains less than 2 percent; *The Battle of Alcazar* 2.2 percent; *David and Bethsabe* a little over one percent. Greene in his undoubted plays has so few double endings that it is not worth while to separate out his blank verse lines and count them in order to estimate the percentages. *Alphonsus, King of Arragon* contains only three such endings, *Orlando Furioso* has nine, *Friar Bacon* four, *James IV* ten, *A Looking-glass for London* (with Lodge) nine.[12]

---

[10] New Shakespere Society Transactions, 1874, p. 16.

[11] I have not counted the lines ending with such words as *Heaven, power,* and the like, where the natural scansion of the line does not seem to call for a separately sounded unstressed syllable at the end. I have also set aside the word *Spirit,* because so often a monosyllable. Compare the following speech from Peele's *David and Bethsabe* with the opening lines of Hamlet's soliloquy:

Bright Bethsabe shall wash in David's bower
In water mixed with purest almond-flower,
And bathe her beauty in the milk of kids;
Bright Bethsabe gives earth to my desires,
Verdure to earth, and to that verdure flowers,
To flowers sweet odours, and to odours wings
To carry pleasures to the hearts of kings.

To be, or not to be: that is the question.
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or to take arms against a sea of troubles,
And by opposing end them.

A free indulgence in such "double endings" as we find in the passage from Peele is no indication that the author will use such endings as we find in the passage from Shakespeare. This difference in the method of counting makes my percentages differ from those of Mr. Robertson.

I have gone into this matter in some detail because here, I think, we have an essential characteristic of a man's style. He may use once, and once only, a word frequently employed by a contemporary; he may confiscate a simile or a phrase that he has heard; but he will not write five plays with a sum total of 35 double endings (as Greene does), and then put 65 in a single act. There are more than twice as many double endings in *Titus Andronicus* alone as there are in all five of Peele's plays put together. But take the five plays of Shakespeare nearest in date to the *Titus:* the *average* is 211 double endings to the play, which is a few *more* than the number found in *Titus!* Indeed, Shakespeare is the only one of these men who uses the double ending in his fully accredited plays with anything like the frequency that we find it in this drama. It is difficult to see, therefore, the justice of Mr. Robertson's conclusion: "In fine, *Titus Andronicus* cannot with any regard to its metrical phenomena be assigned to Shakespeare. Its double-endings, intelligible as coming from Peele, or Greene, or Kyd, are unintelligible as coming from him before 1596."[13]

---

[12] Mr. Robertson finds seven percent in *George-a-Green,* which is only another answer to those who persist in misattributing this play on the hearsay evidence of Ed. Juby.

Mr. Robertson also adduces the rime test and the proportion of prose lines as an argument against Shakespeare's authorship. As to the rime: Mr. Robertson wisely selects three conspicuously poetic plays to make his contrast. Let us put down with the *Titus* the other early plays which he omits.

Titus Andronicus	144	rimed	lines
Comedy of Errors..........	380	"	"
Two Gentlemen of Verona..	116	"	"
Richard III	170	"	"
King John	150	"	" [14]

Let us have the facts regarding the prose. Mr. Robertson says:

"It has a much smaller quantity of prose (43 lines) than any other play ascribed to Shakespeare, except *Richard III* and *Henry VIII*, which have only a little more."

He neglects to state that *King John* and *Richard II* contain no prose at all. That is to say, *Titus* contains about the same amount of prose as Shakespeare's next play of a serious or tragic nature, more than the next two of the same sort, and, as we should naturally expect, less than the comedies.[15]

---

[13] *Op. cit.*, 199.

[14] The three parts of *Henry VI* contain, respectively, 314, 122, and 155 rimed lines. I am depending on Fleay's table.

[15] Fleay's table of the prose lines in the earlier plays is as follows:

Titus Andronicus	43	lines
Love's Labour's Lost	1086	"
1 Henry VI.	none	
2 Henry VI.	448	"
3 Henry VI.	none	
Comedy of Errors	240	"
The Two Gentlemen of Verona	409	lines
Midsummer Night's Dream ..	441	"
Richard III	55	"
King John	none	
Richard II	none	
Romeo and Juliet	405	"

It will be seen that the only real doubt should be regarding the genuineness of *Love's Labour's Lost!*

My conclusion so far is that only Shakespeare could have written the main portion of this play, and that the subject and treatment were entirely possible for him at the very beginning of his dramatic career. From just such a beginning should have come *Richard III*, and finally *Hamlet* and *King Lear*. But only in his first attempt at tragedy could Shakespeare have heaped up his horrors in the manner of Kyd, and paraded brutality and lust for the sake of mere sensation. This alone seems to me a sufficient answer to the ingenious theory of Fuller, even though it found an instant advocate in Professor Baker,[16] and is accepted still by so careful a critic as Professor Schelling.[17] For according to this theory, *Titus Andronicus* must have been written at the period of *A Midsummer Night's Dream* and *Richard II*. If, as Mr. Fuller contends, Shakespeare wrote "practically every line" of the play as it now stands, it makes but little difference that he had two other plays as his sources.

But there are further objections. It is almost a practical impossibility to put two plays together so that they will form one play; and *Titus Andronicus* itself gives not the slightest indication of having been dove-tailed in any such fashion. This theory compels us to believe that the English actors who played in Germany about 1600 used one of Shakespeare's sources instead of Shakespeare's own play which had superseded it; that in 1640 Shakespeare's play had not been translated into Dutch but that the other of his sources had been; and finally that by the end of the century a German author using Vos's pre-Shakespearian source had written a play identical with Vos's at all points except that he kept instead of changing the name of Lavinia.

It is not necessary to imagine all this. The German *Titus* gives every appearance of being a debased version of Shakespeare's drama; it is much closer to the original in plot than the *Romeo and Juliet* or the *Hamlet*. The actors seem to have had no copy of the play, but to have produced it from memory. The plot is reduced to its naked essentials. Only the name of Titus Andronicus himself is remembered, and the names of the others were got by as simple a means as was possible; thus the daughter of Andronicus is Andronica, the Queen of Ethiopia is Aetopissa, Aaron the Moor is Morian, Saturninus is simply "The Roman Emperor," while Marcus received the fanciful name of "Victoriades." That Shakespeare's Lucius is here Vespacian may simply be because Vespacian ends the play as Emperor of Rome; though here, perhaps, a remembrance of the old play of *Titus and Vespacia* may have supplied the association. It has been noted that the play of *Titus and Vespacia* may have dealt with two Roman emperors, and need have no connection with Shakespeare's *Titus Andronicus;* and since Henslowe writes it "Vespacia" all six times, it is at least possible that this character *was* a woman! That the program of 1699 supplies the name of Lavinia indicates only that the translator of Vos's play into German (presumably George Greflinger, in 1650), restored the familiar name from some slightly different modification of the German piece than the one which we happen to have preserved.

---

[16] Publications of the Modern Language Association, 1901, p. 66.

[17] Elizabethan Drama, I, 221.

But there is one significant point of difference between the German version and the English play as we have it, and this is one in which the German distortion is more like Shakespeare than is the Shakespearian *Titus.* I refer to the greater emphasis which is placed upon the victorious return of Lucius with his army, which seems to me essential to Shakespeare's original conception of this drama. Following Cohn's translation, we read at the beginning of Act VII: "Beat of drums and flourish of trumpets. Vespasian approaches Rome with his army, having made great havoc, and desolated all the cities of the Romans." Vespasian then tells of his great triumphs. A speech of the Emperor, a bit later, illustrates this same matter, as well as the pedestrian style of the whole drama:

"Such dreadful bloodshed,—so dangerous a war are things unheard of till now. Never has Rome been in such trouble and peril before! But the great hardships which Vespasian inflicts upon Rome are quite equalled by his cruel devastation of the surrounding cities. It is piteous, piteous! Four battles have we fought against him and lost. . . . My heart is so oppressed that I know not what to do, for my forces are daily reduced, and those of the enemy are on the increase."

I should think nothing of this much of an amplification of the Shakespearean drama were it not that I believe the actors may have been influenced in their reconstruction by Shakespeare's original version of the piece. Shakespeare is most careful in working up the banishment of Lucius, and his departure to raise an army among the Goths,—he shows Lucius returning with his army, he has Aemilius warn the Emperor to prepare to meet him,—and then it all comes to nothing! For some one else has substituted the most revolting scene of the play, that in which Titus makes the queen eat the pasty in which he has cooked her sons,—a feature wholly unlike Shakespeare both in idea and execution. The ending of the play, beginning where Marcus and Lucius address the people of Rome, has the tone and manner of others of

Shakespeare's plays in which the avenging army has been triumphant. It is interesting to note in this connection, that the climax of the drama comes, as always with Shakespeare, in the middle of the third act. It is here that the calamities which befall Titus are completed,—that his measure of grief is full; and at this very moment Lucius goes to raise his avenging army. Shakespeare's genius from the first instinctively wrought in this way.[18]

If we can free Shakespeare from the reproach of having written this scene, and that other, contributory to it, in which Titus cuts the throats of Tamora's sons while Lavinia holds the basin in her handless stumps to catch the blood, a good share of our repugnance to the play would vanish. But let me not be of those who, having formed a theory, bend all the evidence to sustain it. There are objections to regarding this portion of the play as an insertion. Seemingly Shakespearian portions of the play account for the presence of Tamora and her sons at the house of Titus, and for the bringing there also of Lucius under the semblance of peace and friendship; and if I suggest that the army of Lucius might have broken in upon the scene, and Titus as well as Tamora and her sons might have perished in the struggle, I must frankly admit that I have not proven all this. The evidence for it is simply that Shakespeare seems to have prepared the army of Lucius for some such denouement; that the offensive element of the human pasty *could* have been added as an additional horror, and suggests Greene or Peele rather than Shakespeare; and that the actual handling of this particular feature of the banquet is casual and haphazard, and is inconsistent with the fundamental scheme of the drama as a whole.

The second scene of the fourth act first shows Aaron as a broadly humorous character, and this is a scene which is peculiarly unlike Shakespeare from first to last. It contains a considerable number of those once-used words upon the evidence of which Shakespeare's authorship of the play has been disputed, and it contains none of the characteristically Shakespearian passages which other critics have adduced to show that the play is "surely his." It is the scene in which Aaron receives his illegitimate child from the nurse, whom he promptly kills, and goes to secrete his baby among the Goths. This scene is immediately connected with the one before it (IV, i) by the threatening messages sent by Titus to Tamora's sons; and in this scene, in which Lavinia writes her secret with the staff guided by her teeth and stumps, there are again no characteristically Shakespearian passages, while a full fourth of the words noted by Grosart as peculiarly characteristic of Greene and not used elsewhere by Shakespeare occur here. This scene is almost wholly free from double endings, and the physical appeal of the incident itself is in Greene's manner. It is to be noted also that in what seems to have been the original scheme of the play, Lavinia's secret should not be revealed to Titus at this point in the action. It is almost wholly in these two scenes that we have the Latin tags.

---

[18] It does not follow that Shakespeare was the author of that *Titus and Vespacia* which was "new" according to Henslowe in 1591, though this is an attractive possibility. The *Titus and Vespacia* was, however, performed by Lord Strange's men; so those who dispute Shakespeare's authorship of *Titus Andronicus* on the ground of its being performed by other companies may consider this as an argument in favor of his having written the earlier play. That *Titus Andronicus* was acted by Pembroke's men is an argument against Shakespeare's having *revised* the piece, rather than against his original authorship of it.

Everyone must feel with Dr. Grosart that the mawkish exit of Titus, Marcus, and Lavinia, III, i, 254-288, in which Titus carries the head of one of his sons in his remaining hand, Marcus carries the other head, and Lavinia holds the severed hand of Titus in her teeth, is "greatly after Greene's fantastic genius." [19] It is just such ghastly things as this in *Titus Andronicus* that have prevented many admirers of Shakespeare from believing that he wrote any portion of the play; but when we notice how easily such a bit could have been written in, and how unlike the finer portions of the play this is, we are warranted, I think, in regarding this passage as another probable insertion.

The last scene of the second act, since I am proceeding backward, is one which has been challenged by Mr. Authur Symons.[20] It is the scene in which Marcus finds the ravished and mutilated Lavinia in the woods, and I wholly agree that Shakespeare did not write it. Its purpose is merely to emphasize the pathetic appeal for the sake of the sensation, and it is just what a less inspired reviser of the play could and would insert.

Just objection has been made, also, to Lavinia's unwomanly (and uncharacteristic) insulting of Tamora immediately before her ravishment, though Mr. Baildon defends her for it. Mr. Robertson is right, I think, in noting that it is characteristic of the school to which Greene and Peele belonged to justify such suffering as Lavinia's by giving to it the character of retribution;[21] and I have no doubt that the revisers of the play added this (to them) essential touch.

---

[19] Englische Studien, 1896, p. 414.

[20] Introduction to the Facsimile of the Quarto of 1600.

[21] *Op. cit.*, 217.

This same principle of dramatic art (which Shakespeare was always too true a dramatist to observe) accounts, I believe, for the last passage I shall mention as probably the work of the revisers. The central portion of the first act, from line 275 to line 390, is much inferior to the rest, is crowded with many of the evidences of the un-Shakespearian character of the play, and contains none of the characteristic passages. It is here that we are shown Titus killing his youngest son, Mutius, and at first refusing him burial. We are wholly out of sympathy with Titus in all this; the only excuse for it is to make his sufferings more deserved. With this goes the weak and ineffectual bit ("brainless," Mr. Symons calls it), in which Bassianus seizes Lavinia, which provoked the quarrel. This was no doubt merely narrated in Shakespeare's original version, as is the fact of the killing of Mutius, in lines 417, 418.

And this leads me finally to a brief consideration of the nature of these possible insertions when taken all together, and of the play as it would appear with these omitted. If I am reasonably near the truth in my conjectures, we should be able to identify the methods and the aims of the revisers in endeavoring to make Shakespeare's play more acceptable to their employers and their public. The passages I have indicated show (1) a desire to make the tragedy more explicit; (2) a tendency to dwell on the pathetic; (3) an attempt to add to the variety of the action, and consequently (4) a humorous treatment of the villain; (5) a deliberate justification of the sufferings of the good characters; and (6) the working-out of suggestions already in the play.

The last point is particularly noticeable. Given a finished drama to revise, one is thrown back upon the play itself for his material. Aaron's bastard child would naturally suggest a possible scene in which he should receive it of the nurse; Titus's banquet to Tamora and her sons, upon which the army of Lucius was to come, would suggest to a man like Greene the transferring of the sons from the position of guests to that of *menu;* this would involve Titus's knowledge of their crime, which we therefore find revealed in Greene's characteristic manner; and it is so, throughout.

The play of *Titus Andronicus* without these accretions would still be a tragedy-of-blood, and by no means a pleasant piece to read; but it would certainly not be unworthy of Shakespeare in his earliest period. It is only when we judge it in the light of his greatest tragedies, as Mr. Barrett Wendell says,[22] that we feel it to be so unworthy of Shakespeare. It is infinitely finer than any tragedy of Greene or Peele.

---

[22] William Shakespeare, 67.

In this attempt to separate the later additions from the play as Shakespeare originally wrote it (if my theory is right), I have confined myself to the larger and more striking instances, and indeed I have not been able to satisfy myself at every point. I am disconcerted especially when the double endings are numerous in a passage which on other accounts seems to belong to the revisers; but it is to be remembered that these men were peculiarly prone to imitation, and in revising a play they would be especially inclined to write their portions as nearly as possible in the style of the rest. Kyd in translating the *Cornelia* and Marlowe in translating Lucan are at once attracted by the French and Latin verse to an employment of the double ending far in excess of their usual custom; and Greene and Peele, who were, I believe, the revisers of *Titus,* were much more impressionable and susceptible to influence than were Kyd and Marlowe. What has added most to the difficulty of my task is the facility and ready imitativeness of these men (if I am right in supposing that they did it), and also the thoroughness with which the task was done; *Titus Andronicus* as it now stands was no hasty patchwork of a journeyman playwright, but a most careful reconstruction by men of considerable genius. In substituting a scene of their own for one of Shakespeare's, they would naturally incorporate any lines or passages in the rejected scene which appealed to them, and which they could make convenient use of; nor would they hesitate to rewrite any of the other scenes, for of course they thought their own ability vastly superior to that of this unknown young man, and we who think differently must pay the penalty.

There can be, then, but little value in pointing to a word or phrase as one used frequently by Greene or as singing the cadence of Peele; it is only by the prevailing tone and not by an occasional identity or similarity of expression that we are warranted in judging. "Esthetic" criticism has been scornfully condemned as amounting to no more than individual impression; but literary criticism is an art as well as a science, and those who cannot see the woods for the trees are apt to be no better off (and no better natured) than their rivals.

THE HITTITE TEXT ON THE TARCONDEMUS BOSS

George Hempl

It may be proper, by way of introduction, to state that it is not my present purpose to edit a number of pictographic Hittite texts, or to present anything like a treatise on Hittite pictographic writing. My object is to deal with the Tarcondēmus Boss only, this being the generally recognized key to the pictographic texts. But in presenting for interpretation a brief specimen of an unread tongue, one immediately finds himself embarrassed by the necessity of introducing other specimens by way of illustration or corroboration. This renders the presentation of the subject more or less complex and involved, which is to be regretted but can not be avoided. For I deem it necessary to show that the graphic and phonological features involved in my explanation of the Tarcondemus Boss are general and normal; that is, that they are not peculiar to this document, and therefore possibly adventitious or fortuitous and thus without conclusive force. If the illustrative material thus introduced has independent intrinsic value, so much the better; but I do not introduce it here for its own sake. I aim to present nothing about which I feel uncertain. When we consider, however, the pioneer character of the work and the fact that I am not a professional Hellenist, it can not be expected that I have avoided errors, and I shall welcome correction. In justice to myself I may add that up to two months ago, when I got access to the *Corpus*,[6] my work was necessarily based upon the imperfect texts in Wright's and Conder's books. I hope, however, that no traces of this remain. All explanations that I present of Hittite characters or words I alone am responsible for, unless the contrary is expressly stated. Still, it is easy to deceive one's self in such a matter, and one may at any time stumble upon an anticipation of what he supposed had originated with himself. The literature of the subject is extensive and in many cases difficult to get at. A large part of it, including most of the publications of the various oriental societies, is inaccessible to me. In dealing with the Tarcondemus Boss I have had two aims in view: first, to expose the unsatisfactory character of previous interpretations; and secondly, to make clear the true nature of the legend. The Tarcondemus Boss was the first bit of Hittite that I succeeded in reading. This was at the close of 1912. Later I deciphered other pictographic texts, and then various cuneiform texts. I hope at no distant date to publish further Hittite studies, but I shall have to defer doing so until I have brought out my long delayed reports on Venetic, Etruscan, and Minoan.

1. Until comparatively recently, the Hittites were known only as one of the many peoples in or near Palestine. We now know,[1] chiefly through Egyptian and Assyrian sources, that the Hittites of the Bible were but the last remnants of a great people who once held sway over Asia Minor, Syria, and northern Mesopotamia. Their original and greatest capital was at Pteria (§ 8), the present Boghaz Keui, in northern Cappadocia, near Tavium, that is, east of north-central Asia Minor, and they were at the zenith of their power from 2000 to 1000 B. C. This, it will be remembered, was the millennium preceding the coming up of the Hebrews out of Egypt. In 1907 Winckler showed[2] that a new Hittite dynasty arose about 1400 B. C.; and in 1913 I observed[3] that this marked the conquest of the Javonian Hittites by Dorians, who assumed the name of the people they had conquered, much as the German conquerors of the Slavic Prussians called themselves Prussians. We, thus, have to distinguish between the earlier Javonian Hittites and the later Doric Hittites. The Javonian Hittites were akin to other Javonians, namely the Minoans, the Athenians, and the Ionians; while the Doric Hittites were distant cousins of the Dorians of Greek history.[4] In the Bible the Javonians are represented by Javan, grandson of Noah. We must also distinguish between the Hittites proper, whose physiognomy, as well as

---

[1] The reader who is not familiar with the present status of the Hittite question would do well to read Hogarth's excellent articles (*Hittites, Pteria*) in the new Encyclopædia Britannica, volumes 13 and 22. For a more extended treatment, he will find very satisfactory Garstang's *The Land of the Hittites,* Constable & Co., London, 1910. [2] *Mitteilungen der Deutschen Orient-Gesellschaft,* 1907, 35/17.

[3] *Transactions of the American Philological Association,* 44/190.

[4] Hempl, *Hittite Greek,* The Nation, New York, September 9, 1915. On the publication of this communication I received a letter from Professor Bates of the University of Pennsylvania, in which he wrote: "I have wondered whether you were acquainted with von Luschan's theory of the Hittites. He thinks that anthropology proves that the Hittites and the Dorian Greeks, that is, the black-haired Greeks, are one and the same race; that, in fact, the black-haired Greek of today is Hittite. If I remember rightly he regards the light-haired Greek (the type of the Hermes of Praxiteles) as Ionian." This is all that has come to me of von Luschan's views on this subject. If his theory is correct, it may furnish an explanation of the term "White Syrians," which Strabo applies to the Cappadocian Hittites. Still, this expression might have arisen in contrasting Hittites generally with non-Hellenic peoples of Syria. However that might be, it would appear that in Pteria and its

their speech, declares them to be Greeks, and the various subject peoples, ranging from Semites to Mongolians, who helped to make up their armies and are depicted on Egyptian temple walls. I can not here enter into a discussion of the question by what route the Hittites came to Asia Minor. I should say, however, that I see much that favors and nothing that militates against the idea that they came across the Hellespont, as the Phrygians and other Indo-Europeans did. The reader will find of interest in this connection the sixth chapter of Garstang's *The Land of the Hittites.*[1]

2. The records of the Hittites have come down to us in two forms: the native pictographic writing, found mostly on seals and stone monuments; and the foreign cuneiform writing, in which the state documents etc. of the Doric Hittites were written, on clay tablets. In this paper I shall concern myself with the former only. Preliminary reports on cuneiform Hittite will be found in a paper published in the Transactions of the American Philological Association for 1913, 44/185-214,[5] and in the communication to *The Nation* just cited.

3. For many years various scholars have striven, with untiring zeal, to decipher the Hittite pictographic texts; but Messerschmidt, the lamented editor of the *Corpus Inscriptionum Hetticarum,*[6] writing in 1903, expressed it as his opinion that all had been without avail, and that no Hittite characters had been correctly deciphered except the sign of divinity (§ 36). In this harsh judgment on the devoted labors of my predecessors I am reluctantly compelled to concur.[6.1] They overlooked the obvious and fancied the task far more complicated and difficult than it was. For Hittite writing is comparatively simple and offers no insurmountable difficulty to one who attempts to read it as Greek.

---

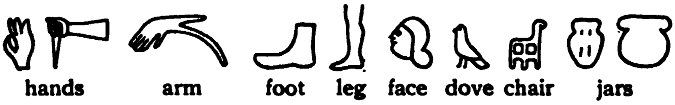
neighborhood, that is, in the original Hittite state, the earlier Javonian ultimately prevailed over the intruding Doric, much as the English prevailed over the Norman in England. It is significant that, while Ϙατϙ(ι)ά, the Doric form of Ϙτέϙια (§ 8), prevailed in the east and appears in Egyptian and Semitic speech as *Kfatiu* (not "*K*[*e*]*ftiu*"), *Kf*[a]*t*[*a*]*r*, *Kp*[*a*]*tar*, *Cp*[*a*]*tar*, *Caphtor; Pitru, Pethor;* and *Kh*[*e*]*tá*/*Kh*[*a*]*tá*, *Khatē*, *Khatti*, *Heth*, *Hitti*(*m*) (Χετ, Χεττειμ); nevertheless, a pure Javonian form must have been the basis of Πτεϙίη, the spelling employed by Herodotus. *k* + bilabial *f* (written *f* or *p*) and *kh*/χ are excellent approximate substitutes for a foreign *q* or *cʷ*; see § 11. The *p* of *Pitru/Pethor* represents the Greek development of *q* to π, as in πέτϙος.

[5] I shall have frequent occasion to refer to this paper and shall do so with the abbreviation *TAPA*.

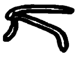
[6] *Mitteilungen der Vorderasiatischen Gesellschaft,* 1900, 1902, 1906. I shall refer to the *Corpus* by means of the abbreviation *CIH.*, adding I and II to designate the supplements (I, 1902; II, 1906), and referring to the plates, not the pages.

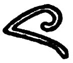
[6.1] See, however, § 7, 14.

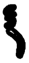
4. The Hittite pictographs were, originally, crude pictures of familiar objects. Some of these, in spite of long use, retained a clear likeness to the object depicted; others gradually lost their identity, being rapidly made with two or three strokes that are a poor reminder of the original outlines. For example—



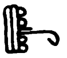
are clear. But one does not at once realize that characters such as

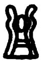


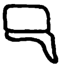




are degenerate forms (§ 14) of pictures of an *arm,* a *ram,* and a *face.* In fact, most of the characters are more or less puzzling. The greatest difficulty is met in identifying objects unfamiliar to us; for example—







and still others as outlandish looking. Moreover, the student who knows the stones only from the transcriptions of others has the great disadvantage of not being sure of the exact form of some objects; for different observers copy them so differently that, for example, what in one writer's transcript appears as a wing reappears in that of another as a rabbit's head. Moreover, the same object may be differently depicted, for example, the *hand* and the *jar,* as seen above.

5. The pictographs do not face in the direction in which they run, as our letters do, but look back, toward the beginning of the word, as though we were to print—

THƎ ƆAT ꟻƎ⅃⅃ Oꟻꟻ THƎ WOOᗡꟼI⅃Ǝ.

They are usually written in a little column, one below the other, beginning at the top; as though we were to print the words THIS IS MY BOOK in the following fashion—

T	I	ᙠ		B	I	T
H	Ƨ	O	or	O	S	H
I	M	O		O	M	I
Ƨ	Y	ꓘ		K	Y	S

Often such a column contains just one word, but by no means uniformly.

These little columns are arranged in a row and correspond, in a way, to the lines on a page that has been tipped over on its right side. In the first row of such little columns the writing usually begins at the top of the right-hand column, runs to the foot of the column, and continues at the top of the column at the left, etc., etc. In the second row of columns the writing starts at the top of the column that stands just below the last column of the preceding row, that is, at the left, and continues, column after column, to the right, zigzagging back and forth, sometimes irregularly. Thus usually in the following order—

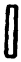
20	16	12	9	5	1
21	17	13	10	6	2
22	18	14	11	7	3
	19	15		8	4
23	27	31	34	38	41
24	28	32	35	39	42
25	29	33	36	40	43
26	30		37		44
				48	45
				49	46
				50	47
				etc.	

Compare the inscription on page 145. But in discussing Hittite words and inscriptions it is found easier to arrange the pictographs as we do our letters, that is, to have them run uniformly from left to right, in lines; and I shall follow this practice.

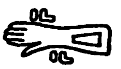
6. In citing a Greek word, I aim to employ the form familiar to us in extant Greek texts, usually the Attic; but with two exceptions. When it is necessary to indicate the Doric character of a word or to call attention to the fact that the earlier form differed from the familiar form, I do so. Compare πεδια (§ 42/2, 5, 5.1) for the later πεζα; τϱας (§ 59) for the familiar τετϱάς. In archaic forms (like πεδια) and in all Doric forms (like πεζα) I refrain from placing accent marks, except in those cases where the accent can be given with confidence and there is some phonological reason for indicating its divergence from Attic accent. Compare § 8.[1] In phonetic transcriptions I follow the practice of modern phonetists in placing the sign of stress (`) *before* the stressed syllable. See § 61. In transcribing cuneiform I use *ꜧ* for *h* with subscript curl, and *ꝁ* for *k* with subscript dot.

---

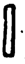
[1] For Doric accent, see Thumb, *Handbuch der griechischen Dialekte,* 78 etc.

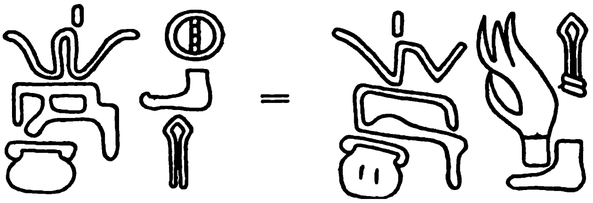
7. To Sayce's[8] identification of the sign of divinity, more correctly of supremacy (§ 3, 36), should be added the identification of the sign by Peiser,[9] and of  or by Thompson.[10] In explaining the use of these characters I am forced to present my interpretation and translation of the accompanying pictographs and thus to anticipate to some extent what I shall deal with more fully farther on, § 34 etc.

(1) The sign or is used (in some texts much more freely than in others) to indicate the beginning of a word. For example, the *hand* or *arm* χε[ιϙ], when used to spell the monosyllable qε (the later Greek τε, Latin *que* 'and,' § 35) is often separated from the adjoining words by this sign of division, thus—



This is especially true if the following word also begins with a velar or labial consonant. The sign of division thus prevents the *arm* from being taken as one of several spellings of a following *q* (§ 11), or for a part of a polysyllabic word, as in *arm — ternion,* χε[ιϙ] — τϙιάς = Ϙετϙιας (§ 7/2). Even under these conditions, repetition and separation rendered the sign unnecessary, as in § 35.

(2) The *bar* , often stunted to , may precede a name or title, as in cuneiform writing; thus in the first and second lines of the inscription on the Marash Lion[11] we find—



Τϙαqον——, ἀκϙο qετϙο
'Traqon——, the great king,' § 8 etc., 34 etc., 44, 45.

---

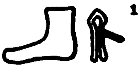
[8] *Transactions of the Society of Biblical Archaeology,* 1882, 7/255. I shall have frequent occasion to refer to the Transactions and Proceedings of the Society of Biblical Archaeology and shall do so with the abbreviations *TSBA.* and *PSBA.*

[9] *Die Hettitischen Inschriften,* 1892.

[10] *A New Decipherment of the Hittite Inscriptions,* Archaeologia, 1913, 64/19 etc.

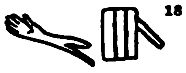
[11] *CIH.* I. 21.

Or it may be attached obliquely to one of the characters spelling the word; see the form of this same king's name as it appears in § 41. The oblique *bar* usually appears attached to a vertical element of the pictograph, thus—


[12]

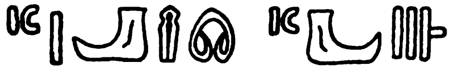
foot — loop, πεδ[ια] — τρο[πή],
= qετρο(ς) 'king,'

and—


[13]

arm — ternion, χε[ίρ] — τριάς,
= Qετριας 'of Pteria.'

For qε- spelled χε-, πε-, etc., see § 11. Both forms of the *bar,* as well as the mark of division, are well illustrated on the Tell Ahmar Stele.[13.1]



foot — loop — handle *foot — ternion*
πεδ[ια] — τρο[πή] — ὠς πεδ[ια] — τριάς
= qετρος Qετριας 'king of Pteria.'

8. This Qετριᾶς/Qατριᾶς is the genitive of original Hittite Qτέρια (later Πτερία, Ionic Πτερίη), Doric Hittite Qατρ(ι)ά,[14] that is, *Pteria,* the name of the Hittite capital, as also of the whole empire (§ 1). The words qετρος Qετριας 'king of Pteria' (§ 34, 35, 38) are found one or more times on nearly every stone (§ 40); and there are many ways of spelling the two words (§ 9, 10).

9. qετρο(ς) 'king' is by far the most common word in the inscriptions. Typical spellings are—

leg — loop, πεδ[ια]— τρο[πή] = qετρο, *CIH.* 2/5,
leg — loop[10] *—handle,* πεδ — τρο — ὠς = qετρος, *CIH.* I. 19/1,
hand — foot — loop, χε[ίρ]/πεδ — τρο = qετρο, *CIH.* I. 10/7,
hand — foot — quaternion — loop, χε/πεδ — τρα[ς]/τρο = qετρο, *CIH.* I. 10/4,
arrow — grubs — κῆ[λον] — τερ[ηδόνες]/
wing — foot — prow, πτέρ[υξ]/πεδ[ια] — πρώι[ρα], *CIH.* I,

---

[12] *CIH.* I. 21/6.

[13] *CIH.* I. 10/3.

[13.1] *Liverpool Annals,* 2, plate 38/3. The figure of the *handle* (§ 42/2) is mutilated.

[14] *TAPA.* 44/195. See also the close of foot-note[4] above.

the last being fine specimens of Hittite cumulative writing (§ 12). *foot/leg*, § 42/2; *loop*, § 42/1; *handle*, § 42/2; *ass*, § 64; *quaternion*, § 59; *grubs*, § 47; *prow*, § 10, end. For other spellings of qετϱo(ς), see § 42. For the spelling of *q*, see § 11.

10. The following are typical spellings of Qτεϱια, Qəτϱιας (§ 8)—

bird — *lyre*, πτέϱ[ων] — ἰα[μβύκη],[14.1]
feather — *lyre*, πτεϱ[όν] — ἰα[μβύκη];[14.2]
country — *ternion*, γα — τϱιάς,[15]
jar — *ternion*, κέ[ϱαμος] — τϱιάς,[18]
wing — *ternion*, πτέϱ[υξ] /τϱιάς,[16]
arrow — *ternion*, κῆ[λον] — τϱιάς,[19]
arrow — *arm* — *ternion*, κῆ[λον]/χε[ίϱ] — τϱιάς,[20]
jar — *penis* — *ternion*, κέ[ϱαμος]/πέ[ος] — τϱιάς,[22]
jar — *grubs* — *ternion*, κέ[ϱαμος] — τεϱ[ηδόνες]/τϱιάς,[23]

Compare also—

penis — *prow*, πέ[ος] — πϱώι[ϱα]/ } cumulative spelling (§ 12) of
comb — *prow*, κτ[είς] — πϱώι[ϱα] } qετϱο,
arrow — *grubs* — *ternion*, κῆ[λον] — τεϱ[ηδόνες]/τϱιάς = Qετϱιας,

that is, qετϱος Qετϱιας 'king of Pteria,' *CIH*. 8/2. This use of πϱώι[ϱα] (alone or with a δ/τ word) to spell τϱο is a case of inexact spelling (§ 13), frequent in certain texts, cf. § 9, last example.

11. As will be observed, labiovelars (*q*, *9*) could be spelled with one or more velars, with one or more labials, or with a velar and a labial, as well as with a labiovelar, §7.1. On the other hand, a pure velar could be spelled with a labiovelar (§ 48), as well as with a velar. See § 13. The voiceless labiovelar stop (*q*) occurs in many English words, like *quit* (= *qit*); and the corresponding voiced labiovelar stop (*9*) is found in adopted words like *Guido* (= *9idō*). The labiovelar stops are generally analysed as, and actually vary with the pure velar stops (*c*, *g*) followed by the corresponding labiovelar fricatives (*ʍ*, *w*, as in *what* and *war*): *q*/*cʍ*/*cw* and *9*/*gw*. German *qu* is not the labiovelar stop *q*, but spells the pure velar stop *c* + the bilabial (*ϕ*/*β*) or the dentilabial (*f*/*v*) fricative.

12. Sayce made the important observation that Hittite was prone to the use of variant and cumulative (§ 9, 10) writing; that is, as seen

---

[14.1] Perrot and Chipiez (see foot-note [illegible]), 2/68.

[14.2] Perrot and Chipiez, 2/71.

[15] *CIH*. I. 21/5, *CIH*. 40/12. See also § 35.

[16] *CIH*. 1/3.

[18] *CIH*. 22; CIH. I. 19/16.

[19] *CIH*. I. 15/2, 21/6.

[20] *CIH*. II. 49/5.

[22] *CIH*. 6/3.

[23] *CIH*. 2/1; *CIH*. I. 21/1, 2, 5 (twice); *CIH*. II. 52/1, 5.

above, the same word may be written in various ways, more or less alike or wholly different; and the same sound or group of sounds may be spelled more than once, that is, by two or more characters representing the same or similar sounds. When transcribing into ordinary Greek letters, it is well to separate cumulative spellings by / rather than —. Thus χε/πεδ — τϱα/τϱο (§ 9), in which χε/πε spells qε, and τϱα/τϱο spells τϱο. Cumulative spellings of a simple consonant, for example δ/τ in πεδ—τϱα, do not need to be pointed out in this way.

13. Hittite scribes, like Minoan scribes, made no attempt to attain exactness of phonology.[24] In fact, this is, for the most part, quite out of the question in iconomatic writing (§ 15). Thus, for example, if English were to be written iconomatically, such a word as *big* would have to be spelled with the picture of a pig, a pick, or a bird's beak, none of which represents *big* exactly. This is a matter that the reader who is accustomed to alphabetic writing only, must fix in mind and not forget.

14. To Sayce and Thompson credit is due for the good service they rendered in identifying various obscure cursive forms with their more pictographic originals, § 4.

15. The chief error under which nearly all Hittite scholars have labored is the assumption that Hittite pictographic writing is largely, if not wholly, ideographic (§ 16), whereas it is chiefly iconomatic (§ 17). Thus Sayce says:—

> "As a rule it is only the suffixes that are expressed phonetically, the roots or stems of the words being denoted by ideographs. It is but seldom that the latter are written phonetically or that the ideographs denoting them are accompanied by their phonetic equivalents."[25]

Exactly the same mistake was made by Evans with reference to Minoan pictographic writing. It is strange that scholars should have been misled in this way. Ideographic writing is the most primitive form of writing. To be sure, it is conceivable that peoples having civilizations as highly developed as the Minoan and Hittite civilizations, might in the matter of writing have made little or no progress beyond the most primitive stage. But the probabilities would all be to the contrary, and the assumption should certainly not have been made without some warrant.

16. In ideographic writing, each pictograph represents and is intended to arouse in the mind of the reader the *idea* of the object depicted. Thus, pictures of a bee, a boy, and a cottage appearing in ideographic

---

[24] For striking illustrations of this, see § 10, § 42/5 and 5.2.

[25] *The Hittites*, 5th ed., 133.

writing would make it certain that the text had something to say about a bee, a boy, and a cottage. Such a text can be read equally well by people speaking different languages, and the reader may be wholly ignorant of the language of the writer. To me it would seem that the explanation of the fact that scholars have so readily assumed that Hittite and Minoan were written ideographically lies in the temptation to try one's hand at reading the texts without being burdened with the task of identifying the language employed.

17. In iconomatic writing a pictograph is intended to suggest to the mind of the reader only the *name* of the object depicted. Thus, in an English text written iconomatically, the pictographs of a bee, a boy, and a cottage *might* spell the English words *bee, boy, cottage,* but they could just as readily be used to spell the words *be* and *boycot.* In order to read a text written iconomatically, one must be acquainted with the particular language in which it is written. It is true that iconomatic writing is an outgrowth of ideographic writing, also that it often retains ideographic elements, much as some lexicographers use small pictures to designate certain categories of words. Still, the difference between ideographic writing and iconomatic writing is world-wide, and the attempt to read an iconomatic text as an ideographic text could result only in confessed defeat (the "blank wall" that Sayce speaks of, see § 26 below) or in the construction of a maze of fanciful inventions.

18. Conder's treatment[26] of Hittite was based on a theory once held by Sayce,[27] Taylor,[28] and Wright,[29] namely, that Cyprian syllabic writing[30] was an outgrowth of Hittite script and, therefore, throws light on the latter. But Cyprian syllabic writing, as I shall show at another time, is a sister of the Minoan syllabic writing out of which the Greek alphabet arose.[31] There could, therefore, be no direct relationship between Hittite writing and Cyprian writing. This does not, of course, preclude the possibility of remote indirect relationship; for it is not improbable that primitive Minoan pictographic writing was related to primitive Hittite pictographic writing. Both peoples used the *arrow,* the *hand,* the *prow,* and perhaps other signs,[32] and that with the same values. But the similarities between the two systems are of a general character and may be wholly accidental. I have not observed that Conder makes any asso-

---

[26] *The Hittites and their Language,* Edinburgh, 1898.

[27] *TSBA.* 5/31, 7/278.

[28] *The Empire of the Hittites,* 126 etc.

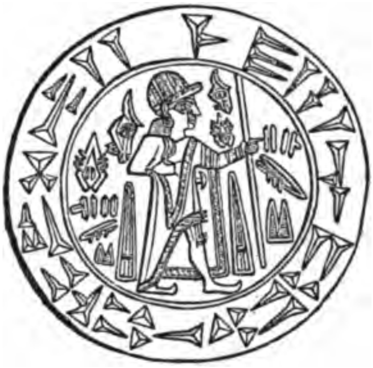
[29] *The Alphabet,* 2/123.

[30] Thumb, *Handbuch der griechischen Dialekte,* vii and 285 etc.

[31] For the present, see Evans, *Scripta Minoa,* 1/68 etc.

[32] Evans, *Scripta Minoa,* 1/242-3.

ciation of Hittite and Cyprian signs for which there is justification, with the one exception of the *arrow* κῆλον (*ce/ca*), § 10. Where Cyprian signs fail him, he freely draws upon linear Babylonian. But whether connecting Hittite characters with Cyprian or Babylonian, Conder is guided wholly by similarity of form, and in many cases it takes the eye of faith to discover the similarity. He thus believes he has found in Hittite a Mongolian tongue. The best test of the value of his method is the careful reading of a portion of his exposition. It may safely be asserted that there probably is no one now who has faith in Conder's work.



THE TARCONDEMUS BOSS
showing the reverse of the original.
(W. Wright, *The Empire of the Hittites*, 156, 2d ed. 165.)

19. The three scholars who are regarded as having made the most serious attempts to read Hittite are Professor Sayce[34] of Oxford, Professor Jensen[35] of Marburg, and R. Campbell Thompson.[10] It has long been recognized that the key to Hittite speech should lie in the successful interpretation of the bilingual text on the Tarcondemus Boss; and this belief has never been abandoned except as a result of one's failure to decipher the text. I shall, therefore, present in this paper the interpretations that these three scholars have offered of the legend on the Boss, from which one may judge their methods and results.

20. In criticizing the work of Professor Sayce, as I often have to do, I find myself in a very embarrassing situation. What he has done

---

[34] Sayce's work appeared in many papers published chiefly in the *Transactions and Proceedings of the Society of Biblical Archaeology*, especially in the volumes for 1903, 1905, 1907; also in his little book *The Hittites*, chapter VII.

[35] *Hittiter und Armenier*, 1898.

for philological science is almost incalculable. Wherever one goes, even into remote corners of linguistic knowledge, one finds that this indefatigable worker was there before him. And nothing that Sayce touches is left quite as dark as he found it. But one can not shut his eyes to the defects of his method, or fail to recognize the fact that they are not insignificant. He has a fertile imagination, without which no one can make any progress whatever in the decipherment of texts like the Hittite. Still, he does not always subject his ideas to rigid scientific tests, but permits himself to regard as proved what he has only guessed or assumed, and to pass on from one unproved theory to another. While Hittite scholars will always be under deep obligations to Professor Sayce for all that he has done for Hittite studies in general, it is only just to say that very little indeed of what he has attempted in the way of deciphering and interpreting the Hittite texts has permanent value.

21. Sayce says[36]:—

> "The story of the boss is a strange one. It was purchased many years ago at Smyrna by M. Alexander Jovanoff, a well-known numismatist of Constantinople, who showed it to the Oriental scholar Dr. A. D. Mordtmann. Dr. Mordtmann made a copy of it, and found it to be a round silver plate, probably the pommel of a dirk, round the rim of which ran a cuneiform text. Within, occupying a central field, was the figure of a warrior in a new and unknown style of art. He stood erect, holding a spear in the right hand, and pressing the left against his breast.[36.1] He was clothed in a tunic, over which a fringed cloak was thrown; a close-fitting cap was on the head and boots with upturned ends on the feet, the upper part of the legs being bare, while a dirk was fastened in the belt. On either side of the figure was a series of 'symbols,' the series on each side being the same, except that on the right side the upper 'symbols' were smaller and the lower 'symbols' larger than the corresponding ones on the left side.
>
> 22. "In an article published some years later on the cuneiform inscriptions of Van, Dr. Mordtmann referred to the boss, and it was his description of the figure in the centre of it which arrested my attention. I saw at once that the figure must be in the style of art I had just determined to be Hittite, and I guessed that the 'symbols' which accompanied it would turn out to be Hittite hieroglyphs. . . .
>
> 23. "The reading of the cuneiform legend has been the subject of much discussion, for the most part needless. It gives us the name of the king whose figure is engraved within it, and the first portion of it reads: 'Tarqu-dimme king of the land.' The second portion is of more doubtful interpretation, and the actual meaning of it could not have been

---

[36] *The Hittites,* 5th ed., 136 etc.

[36.1] This is true of the original, not of the reproduction; but Sayce's "right" and "left" immediately below refer to the reproduction.

arrived at with certainty before the decipherment of the Hittite texts. The last word *me-e* or *mê* is, in fact, a transliteration of the Hittite *mê* 'I (am),' and the preceding character is not phonetic but the ideograph of 'city.' The whole legend is, consequently, 'Tarqu-dimme king of the land of the city (am) I.'[37]

24. "The name Tarqu-dimme is evidently the same as that of the Cilician prince Tarkondêmos or Tarkondimotos, who lived in the time of our Lord. The name is also met with in other parts of Asia Minor under the forms of Tarkondas and Tarkondimatos; and we may consider it to be of a distinctly Hittite type. The boss probably came from Cilicia.

25. "The twice-repeated Hittite version of the cuneiform legend naturally corresponds with the latter.[38] But the arrangement of the characters composing it, due more to the necessity of filling up the vacant space on the boss than to the requirements of their natural order, allowed more than one interpretation of them. There were, however, two facts which furnished the key to their true reading. On the one hand, the inscription is divided into two halves by two characters whose form and position in other Hittite texts show them to signify 'king' and 'country'; on the other hand, the first two characters are made, as it were, to issue from the mouth of the king, and must thus express his name. Hence the first of them, which represents the head of a goat, will have the ideographic value of *tarqu*,[39] while the second, which has not hitherto been met with elsewhere in the inscriptions, will be *dimme*. Then follow the ideographs of 'king,' 'country,' and 'city,' the first being a picture of the royal and priestly tiara[41] and the third a representation of a plough, while in the second Mordtmann had already seen a likeness of the peculiar shafts of rock which rise out of the Kappadokian plateau.[42] The last character is phonetic,[43] with the value of *me*, a short oblique line attached to it further expressing the vowel *e* of the cuneiform text.

26. "The hope I had cherished that in the bilingual boss of Tarkondêmos we had found the key to Hittite decipherment was not realized.[43.1] The key refused to turn in the lock. System after system of decipherment was proposed, which satisfied none but its author, and not always even him. For more than twenty years I had vainly tried every possible or impossible combination; a blank wall invariably defied my efforts.[43.2] I came at last to the conclusion that without a long bilingual inscription the decipherment of the Hittite hieroglyphs was a hopeless task.

---

[37] For the correct rendering of the cuneiform legend by Hilprecht, see § 57.

[38] This was a natural but, as it turned out, an erroneous assumption. See § 57.

[39] See § 31.

[41] See § 33, 54.

[42] They are nothing but the usual triangles representative of mountains or country, §50, 51.

[43] It is phonetic, as are all the other characters (§ 15), but its value is (*tra*, § 59) not *me*, and the oblique spur designates it as a proper name (§ 7/2). See § 32.

[43.1] See § 19.

[43.2] See § 17.

27. "For this the silver boss was itself in part responsible. It misled instead of assisting. The analysis of the Hittite legend upon it given above has been made possible only now that the decipherment of the texts has become an accomplished fact. We now know that the last character but one is an ideograph and not phonetic,[44] and that the first element in the name of the king is used with its ideographic and not its usual phonetic value. This was *is*; it was only when it denoted a goat that it was pronounced *tarqu*.[45] . . .

28. "In the early days of my Hittite studies, misled by the copies we then possessed of the Hamath texts, I had confused together the two ideographs of 'king' and 'district.'[46] Decipherer after decipherer had followed me in my error, thus missing the sense of the inscriptions and losing the help of the geographical key. As long as the ideograph of 'district' was supposed to mean 'king,' the decipherer did not know where to look for the geographical names. Once the determinative was discovered, however, he knew that he would find them in the words to which it was attached.

29. "The ideograph denoting a 'district' which derived its name from the capital city is not quite the same as the ideograph for 'country' which figures on the silver boss. It represents only one mountain peak, whereas the ideograph for 'country' represents two. But the two ideographs interchange in the inscriptions, their signification being almost the same."

30. I have read these paragraphs over many times, but I must confess that they still are far from clear to me. Even admitting the legitimacy of the symbolic interpretation of ideographs, I do not understand how a *plow* could serve as an ideograph for 'city' (§ 25); and this strange assumption is in no way clarified or established by Sayce's explanation that "the plough properly signifies 'the cultivated soil,' but it is also used to denote 'city,' possibly through being confused with another ideograph of similar shape which signifies 'a gate.'" Unfortunately it is characteristic of the method employed by Sayce in his Hittite studies that he does not cite cases where the *plow* obviously has the value 'city,'—I mean where the fact that it has this value is established independently of his theory that it has this value on the Tarcondemus Boss. It is also in harmony with Sayce's method that he contents himself with an allusion to "another ideograph of similar shape which signifies 'a gate.'" One feels that one has a right, if he is to agree with the writer, to see the ideograph referred to, and that he should be given the evidence that it means 'a gate.' In a word, I must frankly say that, so far as I have been able to discover, Sayce has done absolutely nothing to make it at all probable that the *plow* in our text stands for 'city.'

---

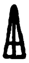
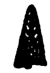
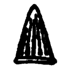
[44] This is an error, see § 30.

[45] See § 31.

[46] See § 33.

31. Moreover, one is puzzled to understand how the *goat* can have "the ideographic value of *tarqu*" (§ 25,27). Sayce says, "The first element in the name of the king is used with its ideographic and not its usual phonetic value. This was *is*; it was only when it denoted a goat that it was pronounced *tarqu*." Now a character may be an ideograph and represent the object depicted; this is its ideographic value. But it may also represent a sound or a group of sounds; this is its phonetic value. What then can Sayce mean by saying that the phonetic value of the *goat* was *is*, but that it was pronounced *tarqu* when it denoted a goat? Does he perhaps mean that the people of Medan recognized the idea 'goat' in the royal name *Tarcondemos*? It is true that in cuneiform writing, in which wholly distinct pictographs, in the course of time, became blended in one and the same cuneiform character, such a character might retain the ideographic value of one of the original pictographs and the phonetic value of another; but this fact does not justify us in assuming that in a pictographic system like the Hittite, a perfectly clear pictograph like the *goat* had one ideographic value and an independent phonetic value. How Sayce came to assume that the *goat* had the phonetic value *is* or *iš*, is easy to see. He found it in a group of characters that he erroneously assumed spelled *Carchemish*; that is all. We shall see (§ 57, 59) that the *goat* in reality had the phonetic value *tra*, the beginning of τϱάγος, the Greek word for 'goat.'

32. Sayce's rendering of the so-called last character (namely, the *quaternion*, τϱας, a common spelling of τϱα/τϱο, § 59) by *mê* was based on circular argument. He believed that the cuneiform inscription ended in *me*. This he could not explain as Assyrian, but assumed that it was a transcription into the Assyrian text of the phonetic value of what he believed was the corresponding Hittite character. He then concluded that this assumed Hittite *me* meant 'I (am),' and that it had been incorporated into the Assyrian text with the same value. See § 23.

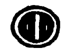
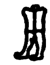
33. Furthermore, in spite of what Sayce says (§ 28) as to having finally succeeded in disentangling the signs for 'king' and 'district,' it is obvious that he still takes the *district* sign for a sign of kingship. The  which Sayce, Jensen, and others assume to be a tiara and so a sign of kingship, is no tiara at all,[47] nor does it coincide with "the royal head-dress of the chief figures at Boghaz Keui," namely  or 

---

[47] For a real *tiara*, observe the on the Phaestos Disc, *Harper's Magazine*, January 1911, 191.

as Sayce earlier asserted.[48] Instead, it is simply a form of the *district* sign, § 51/9. See also § 54. It is strange that Sayce should have regarded the conical hat seen on the chief figures at Boghaz Keui as a "royal head-dress"; for it is worn only by the gods, while the figure now recognized as the king, wears, like Tarcondemus, a close-fitting cap. To be sure, Sayce calls the king a "eunuch-priest"; but he certainly could not have taken the gods for kings. At another time I shall show that the aediculum that the king holds aloft is the royal coat of arms.

Before continuing (see § 54) the criticism of Sayce's interpretation of the Boss, it seems best to consider at some length the means employed by the Hittites to express the ideas 'king,' 'great king,' 'supreme ruler,' etc. (§ 34-49) and the signs representing 'country,' 'district,' and the like (§ 50-53), as also certain other pictographs necessarily involved.

34. I can find no evidence that Hittite writing possessed any sign for kingship. The word for 'king' appears always to have been written out, even when used as a title. The Hittites were fond of referring to their gods and kings in figurative language. One of their chief gods was called *Thesippos* 'the mare's suckling,' this *Thesippos* being the full form of *Theseus.*[49] The name is recorded in cuneiform writing by the neighbors of the Hittites in the following approximate forms: *Tešubaš, Teišbas, Tišebu,*[49.1] *Tešup,* etc.[50] This god the Hittites called "the Supreme Ruler," also "the Supreme Support of Pteria"; and their priest-king they called "the Rock" of the State. "The Supreme Ruler" was spelled[51] with  ἄϰϱον 'supreme' (§ 36), followed by a mutilated body  ἀϰϱών[ια],[52] or by a conical object,[53] apparently representing a mountain peak, ἄϰϱον, or a fragment of something, ἀϰϱότομος, intended to suggest ἄϰϱον 'chief' or 'ruler.' Compare the similar combination of ***mace-top,*** ἄϰϱον, and the ***uplifted hand,*** ἀϰϱόχειϱ, § 45.

35. One of the stones at Malatia[54] represents Thesippo(s) standing on a bull, with his triangular bow in his right hand and in his left three

---

[48] *TSBA.* 7/300, and Wright, *The Hittite Empire,* 162, 2d ed. 171.

[49] Gruppe, *Griechische Mythologie,* 584 and foot-note [2]. See also § 74.

[49.1] Compare Egyptian *Tis*[*e*]*bw.*

[50] In these cuneiform spellings, *-paš/-baš* represents Greek -ππος, as *-pu/-bu* represents -ππο(ς) (§ 42), *TAPA.* 44/188. See footnote [49].

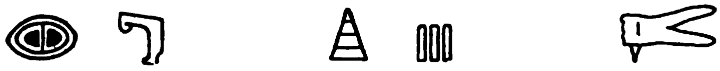
[51] *CIH.* 27, B, E, 29/11.

[52] Or ἀϰϱώνιον (cf. τομία/τόμιον), or some other word related to ἀϰϱωτηϱιάζω 'to mutilate,' 'to cut off the extremities.'

[53] *CIH.* 30, A.

[54] Charles, *Hittite Inscriptions,* pages 41-42; Garstang, *The Land of the Hittites,* plate 44.

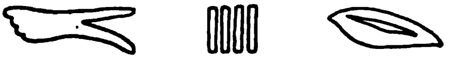
thunderbolts. Facing him stands the priest-king, pouring out a libation to the god. In front of the god is a legend ending in qε 'and,' which is continued in front of the king, thus—



mace-top — *bracket* ἄκρον — ἕρμα

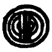
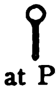
country — *ternion* γα — τριάς

arm χε[ίρ]



arm — *quaternion* — *mouth*
χε[ίρ] — τρά[ς] — ὠς
= ’Ακρον ἕρμα Qατριας qε qετρος
'The supreme support of Pteria, and its rock.'

For Qατριας/Qετριας, see § 8, 10. For qε, later τε 'and,' see § 7/1. In Minoan linear writing, as also in its derivative, archaic Cyprian syllabic writing,[55] this word was spelled with a *hand* χε[ίρ], whence the usual Cyprian sign for *ce/ge*.

36.  is usually called the sign of divinity and translated 'the god' (§ 3, 7). This, however, is not quite correct. The figure represents the top, or ἄκρον, of the royal mace  which is seen before some of the figures on the sculptured rocks at Pteria and in other representations of Hittite sovereigns and gods.[56] Like our "orb," or "mound," it was the symbol of sovereignty or supremacy, and was applicable to human as well as to divine rulers. In some cases it could well be rendered *Lord,* but it generally is best to translate it by some such adjective as *great, supreme, exalted,* or to leave it unexpressed. The use of only the top, or ἄκρον, of the mace was a happy idea, as it suggested the adjective ἄκρος 'highest,' 'supreme.' See also § 34, 35, 45, 7/2.

37. The *bracket* might here be regarded almost as an ideograph for 'support'; whether it brought to the Hittite mind the word ἕρμα, ἕρεισμα, or some other word for 'support,' is immaterial, for almost every one of them was also used figuratively for a chief or a god who was regarded as the stay or pillar of the state.—For the *country* sign, see § 51/9.—

---

[55] Evans, *Scripta Minoa,* 1/70.

[56] Perrot and Chipiez, *History of Art in Sardinia, Judaea, Syria, and Asia Minor,* II, fig. 278, 280, 281, and plate 8; *CIH.* 22, 27.

The *arm* or *hand* is made in various positions, often grasping a dagger. See § 4 end, 7/1, 35.—The *ternion* occurs very frequently because used in spelling Ϙετριας, § 8, 10.—The *mouth* here suggests a Greek counterpart to Latin *ōs*. The usual Hittite spelling of -ος is the *handle* ὡς, § 42/2.

38. It is not unlikely that the designation of the king of Pteria as the rock of the state was suggested by the fact that *Pteria* means 'rocky place,' or 'the rocks,' the place being in reality a remarkable rocky fastness. But the designation of a king or other leader as the rock of the state or some other institution is a natural one anywhere; compare Christ's words to Peter: κἀγὼ δέ σοι λέγω, ὅτι σὺ εἶ Πέτρος, καὶ ἐπὶ ταύτῃ τῇ πέτρᾳ οἰκοδομήσω μου τὴν ἐκκλησίαν, Matthew, 16/18. Certainly ϙετρος 'rock' became the regular Hittite word for 'king.'[56.1]

39. This may well be illustrated by one of the famous monuments at Marash; for example, the stele[57] whose inscription begins:—

> (Γε) Ϙετρο Τραϙον——, ἀκρο ϙετρος, Ϙετριας ϙετρος, Γοργονας ϙετρος, γων ϙετρος, etc.
>
> '(I,) King Traqon——, the great king, king of Pteria, king of Gorgon, king of the lands (= the world),' etc.[58]

40. The Hittite princes of the east styled themselves "king of Pteria" (§ 8) as well as king of their local principality. How much reality this reflects and to what extent it was only a pious phrase, I am unable to say; but one is reminded of the mythical persistence of "the Holy Roman Empire of the German People."

41. A more or less elaborate pictogram representing the *cheek*, or side of the face, γέ[νυς], is often used, alone or with other pictograms, to spell ϙε-, the first syllable of ϙετρο(ς) and Ϙετρια. At the beginning of an inscription (rarely elsewhere[59]), the pictogram is frequently drawn larger and more elaborately, with one hand touching[60] or pointing[61] to the face. Such an inscription was sometimes cut on the stele or statue of a king, for example at Marash[62]; and in such a case the pictogram

---

[56.1] There was no one word for 'king' in the Greek world, *cf.* βασιλεύς, ἄναξ, ἀρχαγετης, ἄρχων, τύραννος, etc., a fact that has historical significance.

[57] *CIH.* II. 52.

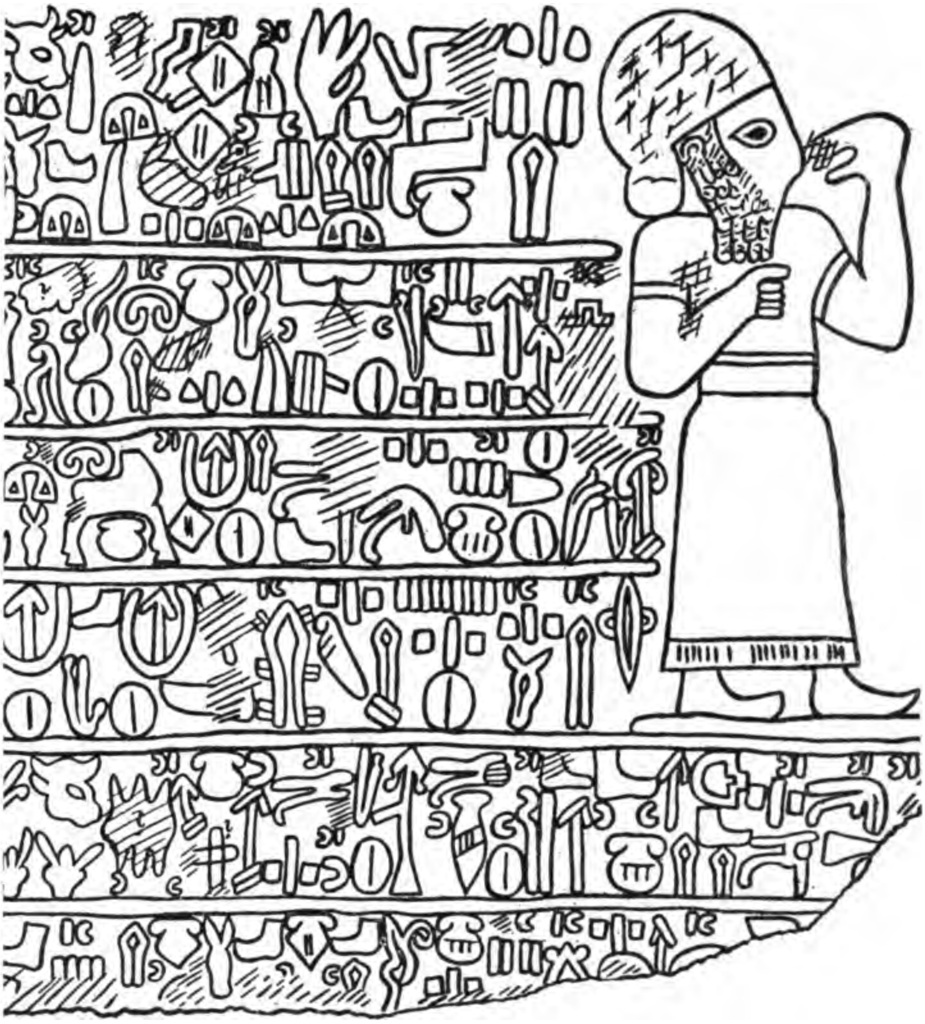
[58] Compare the titles of Sargon: "Sargon, the ruler of Bēl, the Priest of Aŝur, the darling of Anu and Bēl, the mighty king, king of hosts, king of Assyria, king of the four quarters (of the world)," etc.

[59] *CIH.* 5/4, 6/2, 11/3, *CIH.* II. 52/3.

[60] *CIH.* 2/1.

[61] *CIH.* 3/B, 4/A, B, 6/1, 7/1, 9/1, *CIH.* I. 19/1, *CIH.* II. 48/1, 51/1, etc.

[62] *CIH.* 25.



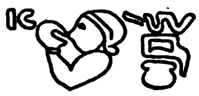
PART OF COPY OF THE INSCRIPTION ON THE MARASH STELE, *CIH*. II. 52.

might appear as a large full figure of a man pointing to his face, as in the case of our Marash stele.[63] The same is true of the parallel inscription on the Marash Lion.[64] Such a figure probably also incidentally served as a portrait of the king who put up the stone. It has repeatedly been suggested that our pictogram is an ideogram for 'I,' and at first sight there would seem to be some justification for this idea. For example, in the third line of our inscription we find—

---

[63] *CIH*. II. 52.

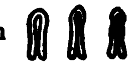
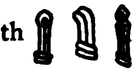
[64] *CIH*. I. 21



That is, the pictogram is followed immediately by the name of the king. Unless we assume that the scribe made a mistake, we must here give the pictogram the meaning 'I'. This does not, however, force us to regard it as an ideogram. Instead, we have γέ[νυς] as the spelling of γε 'I.' This γε/γο 'here,' 'I,' we already know in the particle γε, Sanscrit *áha* 'to be sure,' and the pronoun ἔ-γω(ν), Sanscrit *ahám* 'I,' from **e-g(h)o-m;* compare also the reinforced ἔ-γω-γε.[65] That the pictogram is not an ideogram but an iconomatic element, is shown by the fact that it is so often followed by the *quaternion,*[66] = τϱα/τϱο (§ 59), and thus furnishes the sole spelling of the first syllable of qετϱο(ς) (§ 42). Elsewhere[67] it is followed by labial or other velar words, and may be interpreted either as γε 'I' or as a part of a cumulative spelling of qε-; see § 11. For previous suggestions as to this pictogram, see Thompson,[10] page 11, foot-note.

42. Before an initial consonant, a final -ς after a short vowel tended to become silent in Doric Hittite[68] but remained intact before a vowel or a pause; hence qετϱο and ἀκϱο above. The same phenomenon is observable in Old Latin, Etruscan, and Lycian. The word qετϱο(ς) 'king' is here spelled in the following ways:—

(1) *penis — quaternion — loop*
πέ[ος] — τϱα[ς]/τϱο[πή],

with cumulative spelling of the last syllable (§ 12). A similar form of the first character is used in Egyptian. Hittite has two other forms. For the *quaternion,* see § 59. The character that I have provisionally rendered *loop* appears in various forms, of which  are typical. It is often displaced by or paired with  etc., which I call the *tied loop.* There can be no question that the character, no matter in what form it may appear, has the value τϱο; the only question is, what does it represent? I believe that its Hittite name was τροπή 'a turn,' whether this is to be interpreted as a *loop*, that is, a cord turned back on itself (compare ἀγκύλη 'bend,' 'loop'), or as the *turning post* in the race course (compare καμπή 'bend,' 'turn,' 'turning post').

---

[65] Brugmann, *Demonstrativpronomina,* pages 69 etc. Compare English *Here too,* meaning 'I too.'

[66] *CIH.* 3/B, 4/A, B, 6, etc. Or by the *grubs* (§ 47), *CIH.* 11/3.

[67] For example, *CIH.* 2/1, 7/1, 9/1, and our present inscription.

[68] *TAPA.* 44/207.

(2) *foot — loop — tied loop — handle*
πεδ[ια] — τρο[πή]/τρο[πή] — ὦς

In Doric Hittite (§ 1) the *foot* is known by the Doric name πεδια/πεζα (§ 6), rather than πούς. The *handle* of a tub or jar, resembling the ear of a man lying on his face, was called οὖς, Doric ὦς, and was the usual way of spelling the syllable -ος.[69] Sayce observed that the *handle* ὦς (which he regarded as a *yoke*) stood at the end of words that appeared to be nominatives, and decided that it spelled *-s*, because he found apparent nominatives in *-s* in the cuneiform texts from Tell el Amarna and in Hittite names recorded by the Egyptians and Assyrians.

(3) *penis — loop*[70]*— handle*
πέ[ος] — τρο[πή] — ὦς

(4) *penis — stream — loop*[70]*— handle*
πέ[ος]/πη[γή] — τρο[πή] — ὦς

(5) *foot — handle*[71]
πεδ[ια] —ὦς

This last spelling is less exact (§ 13) than the others, as it ignores the ρ. In the corresponding place in the parallel inscription on the Marash Lion the word is spelled more exactly—

(5.1) *foot — loop — handle*
πεδ[ια] — τρο[πή] — ὦς

compare (3) above. For a different but equally inexact spelling of the word, compare—

(5.2) *penis — river — handle*
πέ[ος] — ῥο[ή] — ὦς,

CIH. 2/1; also *penis — river*, *CIH*. 2/4. For still other spellings of ϙετρος, see § 9, 10 end, 35, 46, 64 end.

---

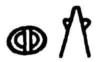
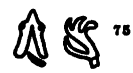
[69] See also § 37 end, 9, etc.

[70] Mutilated on the stone.

[71] Compare *leg — handle*, *CIH*. 16 A.

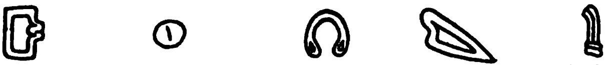
44. The name of this king of Gorgon clearly begins with *Traqon-* (§ 63, 64), but I have not succeeded in making out the second part of it. From Assyrian sources[72] we learn of a Traqonlāro(s) (written *Tar-ku-la-ra* in cuneiform) of the city of Marash (*Marqasi*), who was king of Gurgum in the time of Sargon and Tiglathpileser III, that is, in the latter half of the eighth century before Christ.

45. The word ἀκρο(ς) is here spelled by means of the figure of a large *uplifted hand,* ἀκρόχειρ or ἄκρα χείρ. In the parallel inscription on the Marash Lion,[73] it is so spelled in the second line, but in the first it is twice spelled with the *mace-top,* ἄκρον (§ 36, see also § 12), and in the sixth line with both signs (compare § 34, end), which makes practically[73.1] certain the signification of the hand when held aloft. This interchangeableness of the *mace-top* with the *uplifted hand* is observable elsewhere also, for example in—

 [74] =  [75]

which correspond to *the Great Frederick* and *Frederick the Great.*

46. In some of the inscriptions in the neighborhood of Malatia,[76] including one of this same king, we find a word 'great' prefixed to the title qετρο 'king,' which precedes the name of the king; thus —



house — *pomegranate* — *handle* *cleaver* — *tied loop,*
μέγαρο[ν]/ῥό[α] — ὤς κο[πίς] — τρο[πή]
= μεγαρος qετρο(ς) 'great king.'

This μεγαρος 'great' (mate of *μέγαλος, μεγάλη 'great') has already been identified[77] as the base of the verb *μεγαρ-γω/μεγαίρω 'regard as (too) great,' 'grudge.'

---

[72] Knudtzon, *Die zwei Arzawa-Briefe,* 22; Winkler, *Geschichte Babyloniens und Assyriens,* 224, 246. [73] *CIH.* I. 21; see § 7/2 above.

[73.1] The character (see § 7/2) here identified with the *mace-top* differs slightly from the usual form of that character, and in *CIH.* I. 21/5 it is preceded by the usual form, much as the *loop* and the *tied loop* are often combined (§ 42/1). But Thompson ([20] § 37 etc.) quotes our peculiar form, from unpublished inscriptions, in situations that may possibly prove that he is right in regarding it as a distinct character.

[74] *CIH.* 32/2, 4. [75] *CIH.* 16/A. [76] *CIH.* 16A, C, *CIH.* II. 47.

[77] Brugmann, 2d ed. II. 1, page 356.

47. The word Ϙετριας 'of Pteria' is here (§ 39) spelled—

jar — grubs — ternion
κέ[ραμος] — τερ[ηδόνες]/τριάς

For other spellings, see § 10, 35.

48. Γοργονας (§ 39) 'of Gorgona,' or 'of Gorgon (Gurgum),'[78] is spelled *shield — shield — ram,*[79] or *9ow — 9ow — ars,* that is, with the signs for the words that were later pronounced βουεlη — βουεlη — ἄρσην.[79] The *shield* was also used to spell κυ (§ 72). It will be remembered (§ 11) that the labiovelars (*q* and *9*) were still intact and could be used to spell pure velars. Γοργονα/Γοργόνη, a derivative and variant of Γοργών, is found also as the name of an island off the northwest coast of Italy. As Assyrian cuneiform possessed no *o*[80] and often interchanged *m* and *n*, Assyrian scribes rendered Γοργονα or Γοργών by *Gurgum*. The name, with the same spelling, is found also in other Hittite texts, for example—

shield — shield — ram *jar — ternion*
Γοργονας Ϙετριας
'of Gorgona and Pteria'[81]

49. The word γων 'of lands,' that is, 'of the world,'[82] is spelled ideographically, by two *country* signs. Traqon——, certainly was a great king, for his name is found in inscriptions in many cities, including Malatia, Marash, Carchemish, Aleppo, Hamath, Babylon.

50. It is important that we have clear conceptions as to the signs for *country* (or *land*), *district*, and *foreign country*. These did not develop exactly alike in all countries, and sometimes one sign was used as the equivalent of another (§ 53); but this is no reason why we should not observe such distinctions as are made. The basis of all the signs is a crude picture of an irregular landscape. This appears as three, two, or one mountain, and could be used to represent *mountain*(*s*), as well as *country* etc. Such a character might also have intersecting lines, symbolic of the division of the land into districts. And such a checkered

---

[78] Thompson (page 31) got this nearly right. See foot-note [30] above.

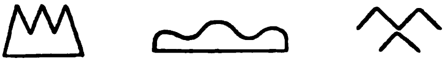
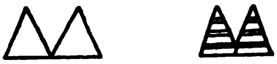
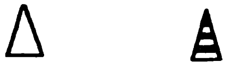
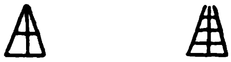
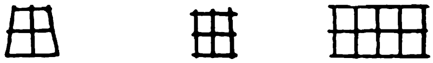
[79] Or ἀρ(σ)νειός, which, too, originally meant 'male.'

[80] Foreign *o*'s were spelled with *u* or *a* in Assyrian. See Delitzsch, *Assyrische Grammatik*, § 31. Compare also Assyrian *Tarqu* for Hittite *Tarqō*(*n*)/*Traqōn*, § 61.

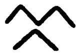
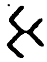
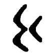
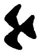
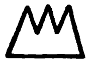
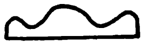
[81] *CIH*. 42/5.

[82] Compare the Assyrian use of 'king of the four-quarters' in the sense of 'king of the world.' See foot-note 58.

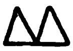
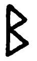
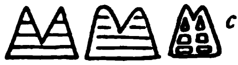
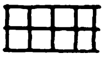
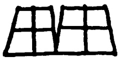
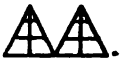
mountain or pair of mountains could, in careless writing, open at the top and ultimately appear as a series of horizontal lines intersected by vertical lines, or as a square with a cross in the center. There thus arose the various forms—

1. Three mountains 
2. Two mountains 
3. One mountain 
4. Intersected triangle 
5. Intersected quadrilateral 

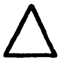
51. These various forms, or some of them, persisted in each community and got specific values as the general idea 'country' became differentiated into 'land,' 'district,' 'foreign country.' But this differentiation was not absolute, nor was it identical in all countries. Compare the three mountains—

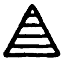
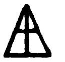
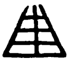
(1) Sumerian  or  } *mountains* or *country*
(2) Assyrian , later  }
(3) Hittite  *country* (γῆ/γα)
(4) Egyptian  *foreign country*

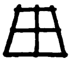
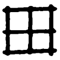
And the two mountains—

(5) Minoan   *country* (γέα)
(6) Hittite  *country* or *district* (γῆ/γα, δῆμος/δαμος)
(7) Egyptian  *district,* derived from an earlier , an opened form of two intersected mountains, like .

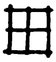
And the single mountain and intersected triangle—

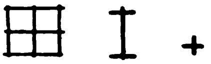
(8) Egyptian  and *land* or *country*

(9) Hittite △ and  *country* (γῆ/γα, δῆμος/δαμος)
 and  *district* (δῆμος/δαμος)

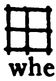
(10) Minoan △ *district* (δῆμος)
 and  *foreign country* (ξένη)

It will be observed that the Minoan sign for 'foreign country' arose out of the sign for 'district,' probably because the smallness of Crete brought it about that there was more occasion to write the sign when naming foreign districts, and that it thus became associated with countries other than Crete. This left the ***two mountains*** and the ***single mountain*** to represent respectively 'country' and 'district.' That the ***three mountains*** became in Egypt the sign for 'foreign country' was natural, inasmuch as Egypt itself was a flat country.

52. [In Minoan writing  ξένη, or *foreign country*, was used to spell ξε. For example, in—



ξέ[νη] — στῆ[ριγξ]
= ξεστή 'polished,'

on the peculiarly polished cylix from Goulas.[83] The sign I or ‡ (later Z) is a στῆριγξ 'support' or 'column,' and spelled *ste* or *tse*, later *st/ts/dz/z*. The + is the Minoan punct. It stands regularly at the end, like our period, or full stop. Sometimes it stands between each word and then may stand also before the first word. Evans thought it always stood at the beginning, and so turned all the texts wrong end to. The sign  appears also in the Formello and Caere alphabets (after N, where we later find Ξ) and in actual use in the Etruscan word *šupelnex* 'vessel',[84] whence Latin *supellex* (with regular assimilation of *ln* to *ll*). Neglect of two or all three perpendicular lines led to the familiar forms ⌶ and Ξ, ξεῖ/ξῖ, from ξέ[νη].
—The △ δῆ[μος] is the basis of the later Δ δε-λτα.—For the

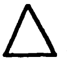
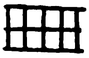
---

[83] *Journal of Hellenic Studies*, 14/278.

[84] Fabretti, 296, ter *b*.

Minoan sources of other Greek letters, I must refer to my forthcoming report on Minoan Greek.]

53. The original identity of the various signs for *land, district,* etc., is also betrayed by the fact that Egyptian

 *land* and  *district*

have just the same phonetic value. Moreover, though the differentiation was real and must not be lost sight of, Sayce is right in saying that the Hittite *country* sign and the *district* sign were sometimes used interchangeably, that is, in variant spellings of the same word; and such is the case on the Tarcondemus Boss (§ 57), though this was not observed by Sayce. Nor must it be forgotten that in Greek the word δῆμος meant both 'country' and 'district.'

54. Sayce recognized three of the six characters on the Tarcondemus Boss, the *goat,* the *plow,* and the *country* sign. As we have seen, his application of the first was imperfect (§ 31), his interpretation of the last as an ideograph was mistaken (§ 15), and of the *plow* he made no logical use at all (§ 30). Thus his explanation of the legend as a whole falls to pieces. So far as I can see, the only apparently reasonable basis that it had was the idea that the *country* sign corresponded to the word 'country' in the cuneiform text. In fact, it does not take much reflection to perceive that Sayce's whole interpretation revolves about this supposed correspondence. One need but read his earlier explanation of the Boss[85] to see how true this is. Had he not been possessed by the idea that this apparent correspondence was a real one, and therefore felt himself forced to regard the preceding sign as in some way standing for the word 'king' in 'king of the country,' I am sure he would never have taken this preceding district sign for a tiara or a royal head-dress. The idea that the *country* sign corresponded to the Assyrian word for 'country' in the cuneiform text was undoubtedly a good one to try. But when it was found wholly unsupported, it should have been frankly and definitively abandoned, and, with it, the various questionable equations and assumptions to which it had given birth. Had Sayce taken this course, he might have freed himself of the idea that Hittite writing was ideographic and that the Hittite text on the Boss must correspond word for word to the Assyrian.

55. Turning now to Jensen,[86] who regards Hittite as proto-Armenian, we find the legend rendered as follows—

---

[85] *TSBA.* 7/299 etc., copied by Wright, 162 etc., 2d ed. 170 etc.

[86] *Hittiter und Armenier,* 50 etc.

(*Tarbibi-* oder) *Tarku*(?)-(*u*)*ašši-mi Urmia*(?) *dsari*(*o*) *dsari*(*o*), and translated:—

'(*Tarbibi-* oder) *Tarkuwaššimi*, von *Urmi*(?) der König, der König.'

To this are added numerous footnotes, of which the following are most to the point:—

"So aber nur dann zu ordnen und zu übersetzen, falls die assyrische Legende— TAR-BI-BI-*uaššimi šar* (*mātu*) *U*(?)*r-mi-i*(?) d. i. TAR-BI-BI-*uaššimi*, König von (dem Lande) *U*(?)*rmi*(?)—eine zum Mindesten annähernd genaue Uebersetzung der doppelten hatischen Beischrift ist. Ohne Rücksichtnahme auf sie würden wir die Inschrift links (auf dem Original) und daher auch die inschrift rechts, von der Königsfigur aus nach beiden Seiten hin lesend, nach den Principien der hatischen Schrift so ordnen: 1) Ziegenkopf, 2) membrum muliebre(?), 3) der einfache Königshut, 4) das Zeichen, das wir *mi* lesen und, weil es in der Gruppe für den Genitiv von *Karkemīš* gebraucht wird und oft mit *m* wechselt, zum Mindesten ähnlich lesen müssen, 5) ?, 6) der doppelte Königshut. Ohne Berücksichtigung der assyr. Randschrift könnten wir dies z. B. deuten: 1) "Von ?-? der König, der grosse (*imiá*) (oder: bin ich (*emi*)), ? (Name), der König"; oder 2) "? ? (Name), der König, der grosse (oder: bin ich), von ? der König" oder 3) "? (Name), von ? der König, der grosse (oder: bin ich), ?, der König." Es muss bemerkt werden, dass wir in der Löweninschrift Z. 3 im Anfang unter und hinter dem Zeichen für "Mann" vielleicht einen Ziegenkopf und dann vielleicht als Symbol eines Königsnamens lesen, dass darauf eine Hieroglyphe, ein schräges Messer mit 2 Einschnitten—oben mit "streitbare" (?) wiedergegeben—folgt, die immerhin mit der Hieroglyphe über dem Doppelkegel unsrer Inschrift identisch sein könnte, und dass darunter eine Hieroglyphe steht, für die wir oben, Amm. 6 zu *Hamā* I-III, die Lesung *imiá* vermutet haben. Darnach könnte man bei Ignorierung der assyrischen Legende versucht sein, die hatische Inschrift so zu lesen: ? GURGUM (oder MARKAŠ) *dsari*(*o*) *mi ? dsari*(*o*), und zu deuten: "? (Name), von *Gurgum* (oder *Markaš*) der König, der grosse, der streitbare(?), der König," und diesen König gar mit dem der Löweninschrift von *Marʿaš* zu identificieren. Die Randinschrift müsste dann von einem anderen Könige, nähmlich einem Könige von *U*(?)*rmi*(?), herrühren, der etwa den Knauf mit der Inschrift erbeutete. Dieser König könnte dann derselbe wie der vielleicht in *Izgin* IV, 5 genannte sein. *Izgin* liegt keine 10 Meilen von *Marʿaš*. Indes—zwingend sind unsre Bedenken nicht, und jedenfalls zeigt die Vergleichung der beiden hatischen Inschriften, der zur Rechten und der zur Linken, dass der Künstler bestimmt einmal, durch die Raumverhältnisse gezwungen, das Anordnungsprincip durchbrach. Nach der Inschrift links (auf dem Original) müsste bei strenger Anordnung der Kegel nach der 2ten, nach der Inschrift rechts aber nach der obersten Hieroglyphe gelesen werden."

I think we can let this interpretation speak for itself. Buried beneath such a load of misdirected learning, it is little wonder that Hittite remained undeciphered.[87]

56. Thompson's treatment of the Boss[87.1] is as unsatisfactory as it is brief: "A possible reading of the hieroglyphs is *Lal*(?) ^{n}*Targu*(?)-*san-t*(*a*) 'country' 'lord' = 'Seal (?) of Targu-santa, lord of the land.'" In general, Thompson's study of the Hittite pictographic texts is courageous, resourceful, and refreshing; but, though he is more cautious than Sayce (§ 20), Thompson too builds vast structures on weak foundations. He relies largely on what he deems correspondences between pictographic Hittite and cuneiform Hittite. When we consider, however, that at the time that he wrote, hardly a single word in the cuneiform texts had been correctly interpreted, it is clear what sort of a basis they could furnish. Thompson believes that the monuments are practically all requests for an alliance,—in itself a most improbable idea.

* * *

57. Once freed from the preconception that Hittite is written ideographically (§ 15) and that the Hittite text on the Tarcondemus Boss must correspond word for word to the Assyrian text (§ 25), one surely should not find much difficulty in discovering the real character of the situation, for it lies on the very surface, clear and unmistakable. So far as I can learn, Golenischeff[88] is the only scholar who has suggested that the Hittite text might contain the king's name only, but in this he was quite right. The established reading of the Assyrian legend is—

> 'Tarqudime, king of the country of the city of Medan.'[89]

Hilprecht identified *Metan* (= *mē`dān*[90]) with Egyptian *Mitn* and Assyrian *Mitaan, Mitana, Mitanu, Mitanni* (the later *Amīda,* from *n Mīdā*(*n*) 'in Midan'), the capital of Arzawa/Arzama (the later Arzanene, the source of the Tigris), and recognized in *Tarqudime* the Assyrian form of the Cilician name Ταρκόνδημος, or Tarcondēmos, as others had done before. It is obvious that the Hittite characters on the left of the effigy of Tarcondemos duplicate those on the right. At first sight, the order of the characters seems to be different. It will, however, be perceived that only the second character is somewhat out of place and that this displacement was due to the fact that there was not room enough to put both this and the tall third character exactly under the *goat's head*. So far as I know, it has not been suspected that each of these two identical texts is itself in duplicate, consisting simply of two different spellings of the name Ταρκόνδημος. Between the king and his spear we find—

---

[87] See also Messerschmidt's critique of Jensen's work, *Mitteilungen der Vorderasiatischen Gesellschaft,* 3, 1898. This critique I know only at second hand, for unfortunately the volume containing it is still inaccessible to me as this paper goes to press.

[87.1] *Archaeologia,* 64/133.

[88] *PSBA.* May 1, 1888.

[89] Hilprecht, *Assyriaca,* 107 etc.; Meyer, *Geschichte des Altertums,* 2d ed. I. 2, page 626.

[90] *TAPA.* 44/187. For the use of `, see § 6, end.

goat — *vulva* — *district*
τρά[γος] — γον[ή] — δῆμος
That is, τρα-γον-δημος = Τραϙόνδημος.

At the right of the spear we have—

quaternion — *plow* — *country*
τρα[ς] — γον[άτιον] — δῆμος
That is, τρα-γον-δημος = Τραϙόνδημος.

In other words, we have two different spellings of the same name, which corroborate one another and make the reading certain. For still another spelling of the name, see § 71.

58. I first thought the second character was a *pine cone* κῶν[ος], which would give the same result. Jensen identified it correctly; see the photograph.[91] A similar pictogram is used obscenely in scribblings on walls etc. on the continent.

59. The *quaternion* τρας is the usual Hittite spelling for τρα/τρο (§ 13); the *goat* τράγος is comparatively rare. Both may be employed in cumulative writing; thus, *goat-quaternion*,[91.1] and *quaternion-goat*.[91.2] The goat is the usual Minoan spelling. τράγος is for *πτράγος, from *qtragos/qetrg-*, the π being lost in the initial group πτρ-. The Hittite τρας is the mate of the familiar τετράς 'quaternion.' The latter is from *qet*(*u*)*r*-; the former (earlier *πτρας), like τρά-πεζα '(four-legged) table,' is from *qt*(*u*)*r*-, with the regular simplification of πτρ- to τρ- as in τράγος above. Or τρας may be a Hittite contraction of τετράς, like Latin *Restūtus* for *Restitūtus*, Greek ἀμφορεύς from ἀμφιφορεύς, etc.[92] The *bar* attached to the *quaternion* designates the word as a proper name, see § 7/2.

---

[91] *TSBA*. end of volume 7; not very clearly reproduced in Sayce's *The Hittites*.

[91.1] *CIH*. I. 10/2.

[91.2] *CIH*. 11/2.

[92] Hirt, *Handbuch*, 2d ed. page 249.

60. The γονάτιον was not the usual Mediterranean plow, but a plow with several teeth, or shares, something like our cultivator. The word (literally a 'knee') was applied to a plow of this style because it looks like the leg of a man kneeling on the ground, with his feet bent under and forward, like the plowshares. For *district/country,* see § 51.

61. Our Τϱαqον- and the *Tarqu-*, or *Tarku-,* of Assyrian *Tarqudime,* or *Tarkudime,* are obviously the same as the Ταϱκο(ν)-/Ταϱκυ(ν)-/ Τϱοκο(ν)- of names found in Cilicia, Caria, etc., and the *Tarkun-* seen in *Tarkun-darauš,* the name of the Doric king of Arzama, etc.[93] All are doubtless correctly identified with the name of the god called *Tarqu/ Tarku/Targu*; see Kretschmer and Meyer, and § 65 below. Moreover, these words can not (in spite of Kretschmer, 409) be separated from Etruscan *Tarχu* (= *tar\`cō̆,* earlier *tar\`qō̆n*), *Tarχna* (*tarc\`nā̆,* earlier *targen\`nā̆,* written *Tarquenna* in Latin, still earlier *tarq-en-\`yā̆,* which was originally the ablative[94] of the feminine family name whose nominative was *\`tarq-en-iă,* which regularly became) Latin *Tarquinia,* masculine *Tarquinius,* Pompeian Oscan Ταϱπινία, Ταϱπίνιος, Osco-Latin *Tarpa, Tarpeius,* etc.[95] It is obvious that we have to do with *traq-/ tarq-* + *ō̆n/on/en* etc. The Etrusco-Latin *Tarquenna,* Latin *Tarquinius,* Oscan Ταϱπίνιος, etc., betray the earlier Etruscan *q*; while Etruscan *Tarχu* (= *tar\`cō̆*) shows the later change of *q* to *c,*[96] as also the usual Etruscan use of the letter *u* to spell *o* as well as *u.*[97] *Tarqu/Tarku/Targu,* the name of the god, has come to us through Assyrian sources from the Hittite Greek Ταϱqω(ν)/Τϱαqω(ν). As the Assyrians had no *o,* they substituted *u* for the Greek ω.[80] The Cicilian names beginning with the name of the god appear to have had the later κ (= *c*), but this is not absolutely certain. In the Greek hitherto known to us, *qo* regularly developed into *po,* exceptionally into *co.* The spellings Ταϱκύαϱις, Ταϱκύμ-βιος, etc., seem to reflect the change of *qo* to *cu,* as in Latin *equos* > *ecus.* But it is conceivable that after *q* had become τ/π/κ in Greek generally, a local archaic *qo* might be spelled κυ (*cu*), just as at a later time Latin *qi* was spelled κυ (*cy*) in Ταϱκύνιος (the Greek rendering of *Tarquinius*) and Ταϱκυνία,—but observe also Ταϱχώνιον.

---

[93] Kretschmer, *Einleitung,* 364. In Egyptian such Hittite names are spelled *Trg-,* and in Lycian, *Trqqñ-.* Compare also "Phrygio-Thracian" names like Τοϱκος/Τοϱκους, Τοϱκουπαιβης; Kretschmer, 223, 224, Jensen, 152 ft. Jensen compares *Terah,* the name of Abraham's father.

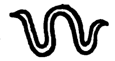
[94] Hempl, *Early Etruscan Inscriptions,* page 11. Matzke Memorial Volume, 117.

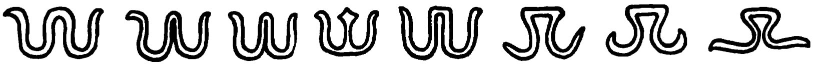
[95] Herbig, *Indogermanische Forschungen,* 1909, 26, II/377, 380.

[96] *Early Etruscan Inscriptions,* page 15. Matzke Memorial Volume, 121.

[97] The same, page 7. Matzke Memorial Volume, 113.

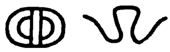
62. I do not understand why Τροκο- by the side of Ταρκο- troubled Kretschmer and led him to assume[98] with Imbert, that they were merely variant spellings for a form with syllabic *r*. Lycian *Trqqñta* really throws no light on the subject. For there is no evidence that the name was Lycian, and thus no reason to assume that the Lycian form is more original than Ταρκο/Τροκο-. To be sure, it has become customary to father all unexplained names upon a supposititious prehistoric Anatolian race; but there is reason to believe that scholars will be more cautious in this matter in the future. The change of ρα to αρ before a consonant, as seen in Τρακον-/Ταρκον-, is the commonest sort of metathesis; in fact, it is practically the rule in large tracts of the Greek territory.[99] The change of Τρακον- to Τροκον- is nothing but an illustration of the regular Greek mutation of α — ο to ο — ο.

63. As we have seen (§ 44), the name *Traqo*(*n*)/*Troqo*(*n*)/*Tarku* frequently appears in Hittite pictographic texts written with a picture of a python, or boa,  δράκων, generally conventionalized into—

 etc.

Compare the similar serpent on the grave mound pictured on a black-figured lecythos.[100] Sayce recognized the Hittite character as representing "a species of snake."[101] In the identification of the pictogram with the δράκων, and the recognition of it as the symbol for the god Tarku, I find that I have been anticipated by Hommel (see § 70). It should be observed, however, that this did not lead Hommel to suspect that Hittite was Greek; on the contrary, he suggested that Greek δράκων was "an old loan-word from the Scythian language = Tarku." It is a pity that he did not draw the obvious conclusion; for, had he done so, our knowledge of Hittite Greek would doubtless, by this time, be far advanced. It is remarkable also that Hommel's discovery of the Hittite spelling of the name of the god Traqon/Tarku should have been ignored as it has by Hittite scholars.

64. Δράκων, the Greek name for the python, furnished an excellent spelling for *Traqōn*/*Traqon*-. On the Babylonian Bowl[102] we find—

 'Great Traqon.'

More frequently the final syllable is respelled (§ 12) by an added character. For example, the picture of a *boat* κύμ[βη] may repeat the -κων of δράκων—

---

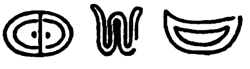
[98] *Einleitung*, 362.

[99] Thumb, *Handbuch der griechischen Dialekte*, page 130.

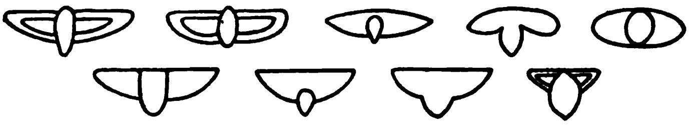
[100] Whibley, *A Companion to Greek Studies*, 502.

[101] *TSBA*. 5/25.

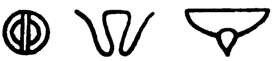
[102] *CIH*. 1/3


[104]

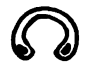
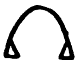
Usually, however, the conventionalized figure of the front view of the face and extended ears of an *ass* ὄν[ος] repeats the -ων of δράκων—



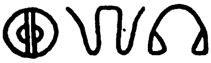
As the *ass* ὄνος may spell either ον (that is, the nominative -ων) or ονος (that is, the genitive -ονος), it is obvious that the pictograms—

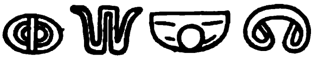

[105]

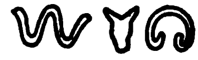
might read either 'the Great Traqon' or 'of the Great Tarqon.' But whether the *ass* is written or not, the genitive -ος may also be specifically spelled by the usual sign for -ος, namely the ear-shaped *handle* of a tub or jar—

 or  , ὠς (§ 42/2).

Thus—

(1)  'of Great Traqon'[106]

(2)  'of Great Traqon'[107]

(3)  'of Traqon.'[108]

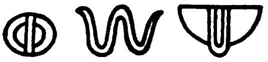
In (1) the *ass* is not used; in (2) it is represented by a conventionalized form; in (3) it appears in a naturalistic form. Hitherto the conventionalized form of the ass has not been recognized, it being assumed to be a winged disc or a vase. The parallel use of the unmistakable naturalistic form of the ass makes my identification practically certain. To be sure, in the course of time the identity of the object became obscured; and so it is not strange that the character at times approached a representation of a winged disc or of a vase. That the pictograms—

---

[104] *CIH.* II. 50/2, 3. [105] *CIH.* 32/2. [106] *CIH.* 2/2.

[107] Tell Ahmar, A. 2, *Liverpool Annals,* 2, plate 38.

[108] *CIH.* 16/c. Jensen and Messerschmidt regard this inscription as a forgery. To me their argument that it begins too much like *CIH.* 16A, has no force. The fact that it shows a more natural figure of the head of an ass, with ears erect, while, so far as I can learn, no modern scholar had suspected that the corresponding figure in the other inscriptions was an ass, seems to me good evidence of its genuineness.



spelled the name of a god was suggested by Sayce and confirmed by Thompson and others; but they thought it referred to Sandes or Tešup. The *ass* ὄνος is used also as a spelling for the case endings -ον/-ων, side by side with *handle* ὠς = -ος:—

hand — foot — loop — handle = ϙετρος, *CIH*. II. 52/3,
penis — loop — handle = ϙετρος, *CIH*. II. 52/1,
penis — foot — loop — ass = ϙετρων, *CIH*. II. 52/3;

face — foot — loop — handle *penis — bull — ass*
γέ[νυς]/πεδ[ια] — τρο[πή] — ὠς πέ[ος] — ταῦρ[ος] — ὄν[ος]
= ϙετρος ϙετρων 'king of kings,' *CIH*. 2/1,

nock — foot — loop *arrow — loop — ass*
πτέρω[μα]/πεδ[ια] — τρο[πή] κῆ[λον] — τρο[πή] — ὄν[ος]
= ϙετρῳ ϙετρων 'to the king of kings,' *CIH*. 2/2.

65. It may be asked, what is *traq-on-*, and who was Traqon? I have come to the conclusion that *traq-on-* stands for earlier *qtrag-on-*. Such a group as *qtr/ptr* is liable to simplification, becoming *tr* (§ 59). If a consonant follows which is cognate or coordinate with one of those in the group, metathesis may early take place, and the simplification then assume the form of dissimilation. Thus *qtrag-on-/(g)traq-on-* appears to have suffered the same sort of metathesis as was suffered by σκέπτομαι, from *σπέκτομαι,[110] and the same sort of dissimilation as we observe in Latin *s(c)iliqua*. For the combination of metathesis and dissimilation in one and the same word, compare cases like *μίγσκω/μίσγω, *λίγσκος/

---

[110] Compare Latin *specio* and Sanscrit *spáçati* by the side of Greek σκέπας.

[111] Fick, *Vorgriechische Ortsnamen*, 19. There are many such cases in languages other than Greek. I will cite only the very complicated one given by Cleasby and Vigfusson (*Icelandic-English Dictionary*, 777): *fra ald-odel's tid/fra arild's tid*, in which *ld — l* suffered metathesis to *l — ld* (*aldodel* > *alodeld*) and then dissimilation to *r — ld* (*alodeld* > *arodeld*), after which *d — d* also suffered dissimilation and became *— d* (*arodeld* > *aroeld, arild*).

λίσγος, *Πελαγσκός/Πελασγός.[111] But *qtrag-on-* is obviously a derivative of *qtrag-os*/τράγος 'goat.' The god Τραqων or *Tarku* had, then, a name to be compared with those of *Apollo Tragios, Poseidon Taurios,* etc. Traqon is a prototype of Dionysus and Pan, and stood in the same relation to Cybele (see § 72) that Dionysus and Pan held to Aphrodite-Artemis. In fact, the goat-god Traqon is nothing but a variant of the bull-god and horse-god Thesippus,[112] the son and lover of Mother Earth; for all are at bottom weather demons, who dwell in the mountains, the desert, and all solitary places. The relation of the weather, and especially of rain, to fertility is obvious. And the association of the goat, the bull, and the ass[113] with reproduction was natural.[114]

66. A Semitic type of Traqon is depicted as the god of fertility or plenty on the famous rock at Ivrîz.[115] On his hat are four pairs of goat's horns, positively confirming our etymology of his name. The goat as a symbol of fertility was associated chiefly with rain and the grape.[116] On the Ivrîz stone Traqon is represented as grasping in his right hand a grape vine with dependent clusters, and in his left stalks of grain. This relation of the god of the vine to the goat we find later in the case of Dionysus.[116]

67. Besides the *on/ōn-* stem seen in Τραqων, Τροκον-, etc., we find also the regular *d*-extension[117] of such an *on/ōn-* stem, namely Τροκόνδας. This *ond/ōnd-* suffix Kretschmer[118] speaks of as something un-Greek.

68. I can not see how anyone can fail to recognize the second part of the name Ταρκόν-δημος, especially when he knows the collateral Ταρκον-δίμοτος, Ταρκο-δίμεντος, Ταρκο-δήμεντος, etc. The form δίμοτος for δήμοτος shows the rise of *ē* toward *ī* that we find in Boeotian and Thessalian,[119] where too we find the Hittite ending *ond/ōnd,* see above.

---

[112] *TAPA.* 44/188.

[113] The horse was regarded as a species of ass, and in the Euphrates Valley was called *sisû,* or mountain ass.

[114] Gruppe, *Griechische Mythologie,* 1384-1401. The whole chapter is exceedingly instructive in connection with Traqon.

[115] *CIH.* 34, *CIH.* II 34. A very good reproduction will be found on plate 57 of Garstang's *The Land of the Hittites.*

[116] Gruppe, *Griechische Mythologie,* 822 etc.

[117] Especially Boeotia, Euboea, Thessaly: Brugmann, II, 1, § 364*d.*

[118] *Einleitung,* 311, 363, etc.

[119] Buck, *Greek Dialects,* § 16 and *a.* For other connections between Boeotia and the Javonian Hittites, see Gruppe, *Griechische Mythologie,* 1724, Boeotia.

[120] *TAPA.* 44/187.

The same change is seen in *Metan/Mitaan/Mitani*[120]; probably also in Assyrian *Tarqudime*. The nominative δήμοτος is to original *δημοτη as the genitive δημότου is to the original *δημοτης. That is, δήμοτος represents a complete shift to the inflection of *o*-stems, just as δήμότου does; while the usual nominative δημότης represents only an approximation to the second declension. Compare προφητος, § 72. Ταρκον-δήμοτος/Ταρκον-δίμοτος is clearly reflected in such forms as —

Ταρκο — δήμεντος
Ταρκο — δίμεντος
Ταρκο — δίμαντος [121]

all with metathesis of ν from the dental δ to the dental τ, and with dissimilation of ο — ο to ε — ο or α — ο; also in Ταρκονδόμοτος, with assimilation of ο — η — ο — ο to ο — ο — ο — ο, which, however, may be orthographic only. Names in -δῆμος are extremely rare in comparison with those in -δήμοτος/-δίμοτος, and there can be no doubt that Τραϙον-δημος/Τροκον-δημος (implied in δῆμος Τροκονδηνῶν, Kretschmer, page 363) had originally exactly the same meaning as Ταρκο-δήμοτος/Ταρκο-δίμοτος, that is, 'native of Ταρκον-δῆμος.' This is made perfectly clear by the δῆμος Τροκονδηνῶν above, which is obviously for δῆμος Τροκονδημῶν 'the district of the Τροκονδῆμοι, or inhabitants of Τροκον-δῆμος.' Compare such combinations as "die Flur und *Stadt* der Freuden*städter*," die Zign*auer* *Aue*," "the *village* of Carters*ville*," "Lond*on* *town*," etc.

69. That the language revealed by the Hittite characters on the Tarcondemos Boss is Greek can not be called in question. But there is nothing in the characters or their use that could betray dialect. The *district* sign may stand for Doric δᾶμος as well as for Javonian δῆμος; and so our text may be either Doric Hittite or the earlier Javonian Hittite (§ 1). It will, however, be observed that *Tarqudime*, the Assyrian form of the name, reflects Javonian Τραϙονδῆμος and not Doric Τραϙονδαμο(ς). Still, the name on our Boss might be Τραϙονδαμος and the Assyrian form be based, not upon this particular king's name, but upon an earlier Javonian form of the same name.[121.1] All this has not necessarily anything to do with the still unidentified language of the long letter from Tusratta, king of Medan, to Amenaphis III. of Egypt.

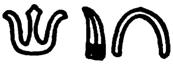
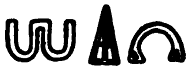
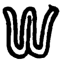
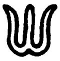
---

[121] Knudtzon, *Die zwei Arzawa Briefe*, 19.

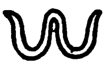
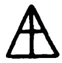
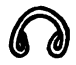
[121.1] Compare English *Brunswick*, which is not from High-German *Braunschweig*, but from the earlier Low-German form.

The language of this principality varied from age to age and was not always the same as that of its rulers.[122]

70. When this paper had long been finished I came upon Hommel's letters to Rylands,[123] and found that he had anticipated me in the identification of the name of *Traqon/Tarku* (§ 63). His letters also present two Hittite texts that bear so directly upon matters treated in this paper that I can not leave them unnoticed. April 29, 1899, Hommel wrote as follows.

> "In a prehistoric tomb at Kedabeg, N. of Goektchai-lake, Mr. Belck found a truncheon (or baton) of command, with the following signs on top:—
>
> 
>
> comp. *Verhandlungen der Berliner Anthropol. Gesellsch.*, 1893, page 63. Now it seems to me certain that we here have a Hittite proper name—
>
> 
>
> *Tarku-dara-s* (= god Tarku is king). Nobody has hitherto seen that these signs are Hittite, but there can be no doubt of the fact. Comp. seal, Schlumberger 6  and 17  ." See *CIH.* 1/1.

71. It will be observed that Hommel follows Sayce in taking the *district* sign for a sign of kingship (see § 33). What we really have is—

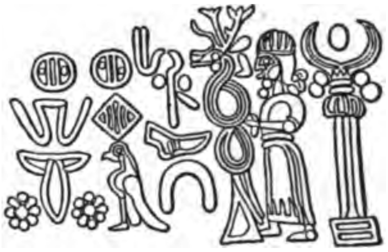
 *python* δράκων
 *district* δῆμος/δαμος
 *handle* οὗς/ὡς
= Τραϙονδημος/Τραϙονδαμος

That is, simply another spelling of the name on our Boss. The ***handle*** here furnishes a cumulative spelling (§ 12) of the final syllable -ος, already spelled by the *district* δῆμος/δαμος. Lake Goektchai is in Armenia, northeast of Medan, the capital of the kingdom of Tarcondemus (§ 57).

---

[122] Meyer, *Geschichte des Altertums*, 2d ed. I. 2, pages 592, 580; also *TAPA.* 44/188.

72. April 10, 1899, Hommel wrote concerning Dr. Hayes Ward's cylinder seal, as I have stated above.[123] From casts furnished by Dr. Ward, Mr. Rylands made a drawing, which I here venture to reproduce. We find three lines of Hittite text and a priest standing between two symbolic effigies. One of these has a stag's head and antlers and a body consisting of the coils of a serpent, with the tail and legs of a bird. These representatives of life on the earth, in the earth, and above the earth,[124] are clear attributes of Gea, or Mother Earth, otherwise known as Ma, Demeter, Rhea, Cybele, etc. The other effigy consists of a standard supporting horns enclosing the orb of the moon, that is, the attributes of the moon goddess, with whom Cybele was often identified. The first line of Hittite text contains the name of 'Great Traqon' (§ 64), the second that of 'Great Cybele,' in the genitive case, each name being preceded by the sign of supremacy (§ 36). We have found the ***shield*** used to spell γο (§ 48), here it spells κυ. The second character is, as Hommel points out, evidently a ***dove***. That is, πελειάς. This with the preceding κυ gives us Κυβελης or Κυβελας 'of Cybele.' The third line is—



prow, πρῴι[ρα]
penis, πέ[ος]
foot,[125] πεδ[ια] } προφητος.
handle, οὖς/ὦς

We have already seen (§ 68) that masculine nouns in -η, instead of adding -ς as in classical Greek, may take -ος, the full ending of the second declension, just as Attic Greek took -ου in the genitive. This προφητος would thus be a regular Hittite form of προφήτης 'one who speaks for (a god),' 'representative,' or 'interpreter.' The inscription would then read—

---

[123] *PSBA.* 1899, 21/224 etc.

[124] Compare the beasts, birds, and fish on the Boeotian vase, Hörnes, *Urgeschichte der bildenden Kunst,* 160, and Lichtenberg, *Die Ägäische Kultur,* 105.

[125] Miscopied as a *cleaver* (§ 46) in some reproductions.

Τραqων Κυβελης προφητος
'Traqon, the interpreter of Cybele.'

That is, the priest identifies himself with the male element of the androgynaic divinity.[126] It is possible, however, though I think less likely, that we should read—

Τραqονος Κυβελης προφητος
'The interpreter of Traqon [and] Cybele,'

taking the *ass* as spelling -ονος, as on the Bulgar Maden Stone (*CIH.* 32/2, see § 64), where the intervening conjunction qε 'and' (§ 7/1) is written out, being spelled by an *arrow* κῆ[λον], as in —ἀκρου Τραqονος qε qετρο qετρων '[son] of Great Traqon and king of kings,' *CIH.* 52/2. If this προφητος is Doric (but πεδια was not necessarily restricted to Doric), it can not be the same word as προφήτης/προφατης (from φήμι 'speak,' √*bhā*), but a parallel formation (from φαίνω 'reveal,' 'expound,' interpret,' √*bhē*, προφαίνω 'reveal,' foretell') meaning 'interpreter,' 'oracle,' 'prophet.' This spelling of the name of Cybele occurs frequently on the stones from Carchemish.

73. It is obvious that the discovery that the Hittites, as well as the Minoans, were Greeks, will have a profound influence upon our conceptions of the early history of Greece and the Near East, as well as of the early civilization of Europe, and of the history of religions. It introduces an element that is wholly new and unexpected, and at the same time it makes clear and congruous numerous elements that were known but not understood before; for example, the transmission of the civilization of the Euphrates valley through the lands of the Hittites to the Greeks of the west.[127] In the matter of the history of religion, I may call attention to one important phenomenon. Thesippus/Theseus (§ 34), the Hittite bull-god, the god of the mountains, of thunder and lightning, and of war, reappears in Crete differentiated into a monster with the body of a man and the head of a bull, and the demigod Theseus who slew him; while in Attica a more rational differentiation trans-

---

[126] Gruppe, 1572, 9; 1331, 2; 1546, 2.

[127] Hogarth, *Ionia and the East*, 1909.

formed the bull-god into the fire-breathing bull of Marathon, and Theseus, the great national hero of Athens, who captured him and sacrificed him to Apollo. This same Hittite bull-god, the great god of the mountains, the god of thunder, lightning, and storm,[128] the god of war, whom the Hebrews learned to know when they absorbed the Hittites of Syria, reappears as the golden calf and the god who was worshipped in the similitude of an ox,—the god of the hills, who treadeth upon the high places of the earth, who roars from Zion, who hath his way in the whirlwind, and the storm and the clouds are the dust of his feet, his fury is poured out like fire, and the rocks are broken asunder by him, the god of hosts, the god of the armies of Israel.[129] The gradual sloughing of the grosser elements of the cult is reflected in the story of the conflict between Moses and his followers and Aaron and his party, who clung to the worship of the god in the tangible form of a molten image; and in the account of Hezekiah's destruction of the images and of the brazen serpent, whose adoration Moses himself was said to have encouraged.

---

[128] This Hittite weather-god was akin to the Syrian-Assyrian Hadad/Adad and the Damascan-Babylonian Rimmon/Rammon.

[129] Ward, *American Journal of Semitic Languages and Literature,* April 1909.

A NEW EMOTIONAL EFFECT IN TRAGEDY

FRANK E. HILL

I

ARISTOTLE, to whom run many roads in the realm of art-philosophy, tells us that the emotional effect of the tragic drama is found in the excitation of pity and fear, and in a purgation, or *katharsis,* of these feelings thru their very awakening and exercise.[1] It is interesting to apply this Greek judgment concerning drama to the theaters of modern times. There is no doubt but that the spectator's feeling in regard to tragedy varied greatly during the twenty-two hundred years from Euripides to Schiller. Yet thru all the changes which nationality and environment have wrought, we find that Aristotle's phraseology persists in a curious fashion. In sixteenth, in seventeenth, in eighteenth century drama, the attitude of the audience has varied greatly, but, oddly enough, not to the extent of arousing and purging other emotions than pity and fear. Changing in its quality, the *katharsis* has been constant in name. New types of emotion such as the moral sentiment appealed to in much of Elizabethan and eighteenth century tragedy have fitted under Aristotle's phraseology as new cases fit under the simple wording of an old law in which an unsuspected elasticity is constantly being revealed.[2]

The question I propose takes us beyond pity and fear. It asks whether we do not find in nineteenth and twentieth century drama an emotional effect which the magic phraseology of our Athenian critic will not cover,—an effect new with nineteenth century life and the nineteenth century theater.

I am aware that many consider tragedy a stranger to the modern drama. Our contemporaneous stage does not give us plays possessing "truth of argument, dignity of persons, gravity and height of elocution, fullness and frequency of sentence."[3] Indeed, in the face of the shop-girl and butcher-boy heroes of such genuine artists as Hauptmann, Brieux, and Galsworthy, we wonder what Jonson and Webster, with their righteous scorn for the tragedy which their contemporaries asked for, would find to say concerning *Justice, Damaged Goods,* or *Rosa Bernd,* as candidates for the buskined stage. Nevertheless, confronted as we are with the dearth of the old, acknowledged tragedy, we are constrained either to consider modern drama as tragic material, or to say that tragedy, save as a ghost, walks abroad no more. Many have chosen the former course. And in its justification it must be said that the serious plays of our own time have in one sense a fundamental identity with acknowledged tragedy. They are to be distinguished from comedy not only by their tone—a sometimes uncertain criterion—and not only by the catastrophe which marks their ending, but by the machinery thru which this catastrophe is brot about. They meet the description which Mr. W. L. Courtney has given of exhibiting "a clash of two powers—necessity without, freedom within; outside, a great, rigid, arbitrary law of fate; inside, the moderated individual will, which can win its spiritual triumphs even when all its material surroundings and environment have crumbled into hopeless ruin."[4] In other words, they, together with the Greek or Shakespearean tragedies, offer us a hero, a power hostile to him, and the struggle rising from the clash between the two. In Sophocles' *Edipus the King* we gain a sense of an unequal conflict between a potent human soul and a pitiless supernatural anger. In *Macbeth* we are aware of a similar mortal spirit pitted against self and circumstances. In Hauptmann's *The Weavers,* in Mr. Galsworthy's *Strife,* we find the same appalling conflict,—man on one side, a Force beyond him on the other. The identity is not destroyed by the fact that in the latter plays the destructive agency seems to reside in the organization of human society rather than in the malevolence of an Olympus.[5]

---

[1] Butcher's translation of Aristotle's *Theory of Poetry and Fine Arts,* p. 23. Macmillan, London, 1907.

[2] Possibly we might find in Seneca and in such Elizabethan plays as Webster's *White Devil* a new emotional element in the form of horror. The close kinship of horror to fear, however, makes distinction somewhat difficult, and of dubious importance.

Considering our modern drama as tragedy, then, on account of its structure, and of its position as the most vital form of serious dramatic art of our day, I wish to ask whether there has not come with it an emotional effect different from that which past tragic spectacles have offered. Are pity and fear the only emotions aroused and purged in the spectator of twentieth century tragedy? Owing to lack of space, and to the fact that a few well-known examples will be readily admitted as typical, I shall consider five plays only from the multitude presented by the theater of today. These five are Ibsen's *Ghosts,* Hauptmann's *The Weavers,* Brieux's *La Petite Amie,* Galsworthy's *Justice,* and Giacosa's *The Stronger.* Do these and the type for which they stand present an emotional effect new in tragedy?

---

[3] See Jonson's preface to *Sejanus.* Webster's preface to the *White Devil* is interesting in giving a similar Elizabethan ideal for tragedy.

[4] *The Idea of Tragedy,* by W. L. Courtney, p. 12. Brentano's, New York, 1900.

[5] For an explanation of the nature of the tragic Force in each of the types represented here, the reader is referred to the second division of this study.

II

Let us begin our inquiry with a consideration of that toward which all tragedy works, and which in established tragedy marks the height of our pity and fear,—the catastrophe. What has caused this catastrophe in the older types of tragedy, and what causes it in the most modern type? Undoubtedly the element which in both kinds of drama may be held accountable for the hero's fall is the Tragic Antagonist, or the Force which works against the leading character in the play. Some critics have characterized this Force as Fate in Greek tragedy, and in the Elizabethan tragedy have considered it to be a defect in the protagonist's will, or a marshalling of hostile wills of other characters against the hero. Opposed to this definite-minded group of critics (or shall we call them hasty-minded?) is another group with a tendency to deny the simple quality in the Antagonist of both Attic and early modern drama. These writers find the hero's fall to be due to mingled causes,—not only to the power of the gods, but to environment and the character of the hero; not only to a defect in will or the opposing wills of others, but to circumstances and the mystery of Fate as well. Even these non-absolutists, however, tacitly admit the dominant place which so-called Fate occupies in the Hellenic, and so-called Will occupies in the Elizabethan or classical French drama.[6] Their quarrel is more with the obscuration of other forces than with an acknowledgment of preeminence in the case of one. Indeed, the testimony of tragedy itself forces the admission of a characterizing element in the Force. The Greek hero testifies continually, almost dismally, to the destructive proclivities of his gods.

"O ruthless Fate! To what a height thy fury hath soared,"

"All that I can touch
Is falling—falling—round me, and o'erhead
Intolerable destiny descends,"

"Ah Zeus, why this stern hate against thy son?"

---

[6] For an example of what is meant, compare pp. 29-31 and p. 40 in Mr. Lewis Campbell's *Tragic Drama in Aeschylus,* etc.

are typical of the stress laid upon divine anger by the Attic protagonist.[7] In Elizabethan tragedy we find the nature of the Antagonist varied, but thru the variation emphasis on human character and will stands out strongly. Marlowe's *Dr. Faustus* and *Edward II* illustrate the type in which the real source of trouble is an inherent weakness in the hero, while *Macbeth* is an example of a play with a more complicated cause for disaster. Nevertheless, it would not be unfair to quote of the entire seventeenth century stage what Mr. Bradley has said of Shakespeare: "The dictum that, with Shakespeare, 'Character is destiny,' is no doubt an exaggeration, and one that may mislead (for many of his tragic personages, if they had not met with peculiar circumstances, would have escaped a tragic end, and might even have lived fairly untroubled lives); but it is the exaggeration of a vital truth."[8] Nor would it be unfair to refer the reader to Milton's *Samson Agonistes,* where the careful way in which the poet offers God a buckler by thrusting responsibility on the hero is an extreme yet fundamentally characteristic example of the seventeenth century attitude, especially in England. Says Samson from his pain:

Appoint not heavenly disposition, father.
Nothing of all these evils hath befallen me
But justly; I myself have brought them on;
Sole author I, sole cause. If aught seem vile,
As vile hath been my folly, who profaned
The mystery of God, given me under pledge
Of vow, and have betrayed it to a woman,
A Canaanite, my faithless enemy."[9]

Surely there is a gulf between this tragic fault, mounting to the sole cause for disaster, and the Greek *Hubris.*

Without discussing further a problem whose solution to date has always depended much upon the attitude of the solver, I wish to suggest an analysis of the Antagonist, the destructive Force, in Attic and Elizabethan tragedy. May we not say that, granting the presence of other elements, the main factor in the Greek ruining power is Fate or the power of the gods? And may we not assume that in most of Elizabethan tragedy human personality, or Will, holds a parallel position? If we may assume this, we may analyze our respective Antagonists as follows:

---

[7] See *King Oedipus,* Lewis Campbell's translation, 1, 1309-10; *Antigone,* Lewis Campbell's translation, 1, 1340-1342; and *The Madness of Heracles* in *Euripides in English Verse,* by A. S. Way, p. 398.

[8] *Shakespearean Tragedy,* by A. C. Bradley, p. 13. Macmillan, London, 1912.

[9] *Poetical Works of John Milton,* II, 602. Macmillan, London, 1890.

Greek = Fate + Personality + Circumstances.
Elizabethan = Personality + Circumstances + Fate.[10]

This representation is crude. It assumes the presence of two distinct types, whereas what we have is a tendency toward types, as well as instances of reversion from the later to the earlier. But this much is true: around either one of these two kinds of Antagonist the destructive power of all influential tragedy down to 1840 revolves; separate plays may show individual traits, but the source of ruin which they present may be classed under one of the two analyses given above. If the reader will accept this as true, bearing in mind that I do not wish to make his acceptance a vantage point for deductions other than those concerning general emotional effect, we may turn to modern tragedy.

What factors make the destructive power in such dramas as *Ghosts, The Weavers,* and *Justice?* Are the same elements present in it as in the Antagonist of the older types? Unquestionably the identical elements are in evidence. We might say, for instance, that the father of André Logerais, hero of *La Petite Amie,* with his violent objection to his son's desired marriage with a shop-girl, is personally responsible for André's and Marguerite's suicide. We might say that Cæsare Nalli in Giacosa's *The Stronger* is accountable for his own misery and for that of his son Silvio; has he not been guilty of unscrupulous business methods, and has he not carefully hidden his practices from his son? And we might suggest that the catastrophe in *Justice* is due to the linsey-woolsey quality of Falder's character. In *Ghosts* and in *The Weavers* we might play with the idea of Fate, shifting Olympus to Norway or Silesia.

But tho we may find personality a factor, and may seem to find Fate a factor, in the modern tragic Antagonist, I would question whether, as we examine the works of Brieux, of Giacosa, of Galsworthy, of Ibsen and Hauptmann, we can sincerely claim either personality or Fate to be the *chief* element in the destructive agency of our modern plays. If we look carefully at *La Petite Amie* we are impressed with the almost symbolical nature of Logerais *père.* He is the French father oppressing his son, and his power to oppress finds its source in the laws of France and the typical attitude of the French parent toward the French child. Logerais is in this sense André's environment. If he is a symbol for a thousand others, like them the result, the utilizer of conditions, is it possible for us to exalt the personal, present and strong as it is, above the social element? Logerais the type merges his individuality into what he represents,—environment. The power to dominate the early life of his child, to choose his school, later his profession, later his wife, later still, because of the French law, to ruin his chance of earning a livelihood,—all this is given to Logerais by social conditions, and the gift emphasizes these conditions and detracts from the importance of personality.

---

[10] Fate, of course, must be separated from Fate-in-Circumstances. The latter element is considered as identical with "Circumstances."

No less do circumstances play a part in *The Stronger* and *Justice*. Cæsare is not a villain, lying in wait to bludgeon his son with the iniquitous character of his money. His intentions were of the best. He wished all along for nothing more than Silvio's happiness. Neither was he conscious, as he amassed his fortune, of any guilt in the methods he used. He "played the game" as he found it. If his success means the ruin and—thru the nervous shock—the death of his enemy Lamais, he cannot be held responsible. Not to win was to have been beaten. In order to win he must stifle niceties of conscience. He thus appears as the result of the modern financial system. On the other hand Falder, weak and pitiful, presents the result of attitudes and systems as well as the result of a weak personality. Indeed, the very feebleness of the hero gives tone and vitality to the fatal net around him,—the meshes of distrust, coldness, rigidity in the economic world, and the impersonal, maddeningly monotonous character of the prison world—thru which he breaks into death.

Even more decisively do conditions of society color the Antagonist in *Ghosts* and *The Weavers*. If we remember Fate as it exists in Attic and Elizabethan tragedy, we shall see the inherent difference between it and the environment appearing in our two modern tragedies. To the Greeks, to Shakespeare, Fate meant mystery. It was unknown, super-human; beyond the earth, tho affecting it. It is this mysterious, intangible quality in the old Destiny to which Mr. O. E. Lessing refers when he says of Hebbel that he was the first to go into the dialectics of the Idea; Hebbel, and Ibsen after him, explained, made reasonable for the first time, the tragic Force. Instead of unknown gods, they gave social organization and social habits, things of common contact and apprehension.[11] Conditions, then, if they be "Fate," are no more identical in quality with the Greek Fate than the God of modern christianity is with an Egyptian cat. Both the former destroy, both the latter were worshiped; yet to find identity between the two members of either group would be pertinaciously absurd. In the case of *Ghosts* Brandes has stated clearly the nature of the Antagonist. He said of the play in 1881:

---

[11] *Grilparzer and the Modern Drama*, by O. E. Lessing, p. 3. Of course the Elizabethan Force, in so far as it was personal, was understandable. Certain other elements, such as the hints of a super-human power in *Macbeth* partly reveal, are not understandable. See A. C. Bradley, *Shakespearean Tragedy*, 26-39.

"Even Mrs. Alving, who has been so sorely wronged by circumstances, believes that under other conditions she might be happy. . . . And Ibsen is evidently of her opinion. . . . Life itself is not an evil. Existence itself is not joyless. No, some one is to blame, or rather, *many are to blame,* when a life is lost to the joy of life; and Norwegian society, depressing, coarse in its pleasure, enslaved to conventional ideals of duty, is pointed out as the culprit." [12]

Brandes' judgment can hardly be called too strong. Search as we will, we can find no genuine tragic fault in Mrs. Alving. Search as we will, we can find nothing attributable to personal hostility or to malevolent deity, unless we wish to put social vices outside the power and responsibility of mankind. Conditions, environment,—not Fate, are dominant in *Ghosts.*

In *The Weavers* we discover the same essential situation. Fate is the price of fustian, the attitude of society at large toward the workers. Dreissiger, the pitiful capitalist, Hauptmann has clearly made a mere instrument of conditions. His plea that higher wages would mean his own ruin is much the truth; he does not establish the market price, as do his present American business cousins. And in Circumstances as the Antagonist there is nothing mysterious, nothing Olympian. Their inexorability, their terrible dignity, are resident in the system under which men live. They are tangible, Fate intangible; they find an identity with Fate only in their capacity to inflict suffering.

I propose, then, that for the type of modern drama which we have been examining, an Antagonist should be acknowledged whose leading feature is Circumstances,—the formula might read Circumstances + Personality. The reader can see the contrast between this Force and the older types:

Greek = Fate + Personality + Circumstances
Elizabethan = Personality + Circumstances + Fate
Modern = Circumstances + Personality

---

[12] *Ibsen, Bjornson: Critical Studies,* by George Brandes, p. 52. William Heinemann, London, 1899.

III

Let us now return to the question of emotional effect. The leading element in the modern Antagonist, we have seen, is Circumstances, or Social Environment. This, in such dramas as *Ghosts,* causes the catastrophe. And Social Environment, no less than the Forces of past tragedy, arouses the traditional feelings of pity and fear. The spectator knows these emotions naturally and logically as he watches the tragic struggle of any modern hero or heroine, be it Mrs. Alving in *Ghosts* or Laura Murdock in our own Mr. Walter's *The Easiest Way.* But one interesting thing must be noted concerning the modern source of ruin. It is alterable. The audience cannot live to see Mrs. Alving's environment changed, for the heroine of *Ghosts* is past help, but it can live to see old conditions made new and different for her future sisters. This possibility of change was not present in the old Forces to any degree. In the Greek Antagonist it can hardly be said to have existed. The Gods never changed, and the Gods, as we have seen, dominate the tragic situation in the Attic theater. In the *Ajax* of Sophocles we might say that a warning against pride is given, and hence the spectator may feel the possibility of changing himself, and of seeing humanity changed. But *Ajax* is the exception in Greek tragedy, and the moral lesson it bears hardly vital. The Greek *katharsis* was not a stimulant to better behavior, but a mere purgation. Usually the hero's fault was decorative rather than essential,—the moral was, to be reverential of the Gods, but it was hardly believed that tragedy would change human nature. Circumstances, of course, were not considered as alterable. In its own eyes, the Greek state was not open to constant change.

There was an alterability in the Antagonist of Elizabethan tragedy, but, as I have stated, not such a capacity for change as we find in the modern Force. Such possibility of remedy as existed lay in the spectator's personal feeling. The beholder of the play in many instances saw the fall of an obviously bad or weak character, and he might take to heart the lesson he had witnessed. Indeed, it is on record that he did this, if we may believe Hamlet. The prince says (Act ii, sc. ii, lines 625 ff.):

"I have heard
That guilty creatures sitting at a play
Have by the very cunning of the scene
Been struck so to the soul that presently
They have proclaim'd their malefactions,
For murder, though it have no tongue, will speak
With most miraculous organ."

In the case of Lillo's *George Barnwell*—Elizabethan in its fundamental structure, record says that spectators took the lesson offered, and changed their evil ways.[13]

It will be seen, however, that the changeability in the modern and the Elizabethan Forces is vastly different in quality and degree. One can change himself if he is able—we are not too sure of our power,—but he faces a vague and delicate problem when it comes to changing the personal character of his neighbor. Indeed, he is usually unaware of iniquities in himself, and has his neighbor's hidden from him. On the other hand, he can see social ills with more distinctness, and the remedy is fairly definite,—perhaps education, perhaps legislation. In the modern Antagonist, alterability is a direct matter. The spectator goes to change what he has seen, and knows that, granting sufficient social coöperation, it can be changed. In the Elizabethan Antagonist, alterability was not a direct matter. First the spectator must see that he could apply the lesson to himself. Next he must realize that he needed to have it applied. In the third place, he must be able to apply it effectively. In the fourth place, he must know that all his neighbors would follow his example. May we not say that the alterability of the Elizabethan Force was a nebulous affair compared to that of the modern? May we not call it "alterable in a sense only"? If so, we might view our three Antagonists once more, and in reference to alterability, as follows:

Greek = Fate (unalterable) + Personality (practically negligible) + Circumstances (unalterable).
Elizabethan = Personality (alterable in a sense only) + Circumstances (unalterable[14]) + Fate (unalterable).
Modern = Circumstances (alterable) + Personality (alterable in a sense).

Now if the spectator of modern tragedy views a catastrophe the source of which is visibly the result of social environment, hence visibly alterable, will he not have a two-fold consciousness? Will he not in the first place feel a personal concern, almost a personal responsibility, for the distressing situation which he witnesses? Could the beholder of *Ghosts,* for example, escape an awareness of his own presence in, his own contribution to a society where licentiousness was causing insanity? Perhaps he might escape it, but only by denying to himself the truth of the picture presented. If he grants its fidelity, he must feel some degree of responsibility for the disaster he has witnessed. If he is normal he will feel uneasy, will think vaguely of the possibility of mending matters; if he is a man of keen conscience he may feel a deep shame and a definite desire to right the unfortunate conditions he has seen at work. Of course the intensity of the spectator's urge to action will vary with the play he views. And of course with any desire to change goes a hope that change will be effected.

---

[13] Introduction, p. xiv, by A. W. Ward to *The London Merchant* and *Fatal Curiosity* by George Lillo. D. C. Heath, Boston, 1906.

[14] Such "circumstances" as appear in Elizabethan tragedy are mostly those of accident, of happening, etc.—such as Desdemona's pleading for Cassio and loss of the handkerchief, or Duncan's visit to Macbeth's castle. Social circumstances were never seriously shown as conditions to be changed—unless the substitution of one king for another were held up as a remedy for them. Then, of course, personality, not circumstances, was the real source of trouble.

The spectator thus feels pity, fear, and shame—shame that he lives in a world which permits the horror he sees—and with the shame, something of hope,—not for the present hero, but for any person who in the future might be placed in the hero's situation. The shame and the hope are social; they arise from the portrayal of society's influence on the individual; they contemplate a refining of this influence. This emotional effect, of course, could not have come before the nineteenth century. It is a reflection of a nineteenth and twentieth century type of life and thot, —it suggests that our tragedy may be more individual than we had imagined.[18]

"But," the objector will say, "you are putting upon the helpless spectator a load he need not bear. Why must he feel more than pity and fear? Are you not giving him a psychological sense more appropriate to a doctor of philosophy than to a mere citizen?" I answer, No. Admittedly the modern spectator is not conscious of his consciousness, but he is conscious. Neither the Greeks nor the Elizabethans analyzed the pity and fear they felt; no more do our modern audiences. They do not analyze, but they do feel. We are justified in saying that they do for two reasons.

In the first place, logic assures us of their feeling. We have seen that social circumstances are the destroying power in the type of modern tragedy which we are discussing. This being so, the question arises:

---

[18] I am indebted to Professor R. M. Alden for a suggestion as to the attitude we should have toward the class of drama under discussion. Unquestionably in former times there was a parallel to the social aspect of modern tragedy in comedy, where the follies of society may be said to have been exhibited. It is a question whether the sensations of shame and hope may not represent a transference of an effect from comedy to tragedy; may not, indeed, represent a sort of breaking down of the barriers between the two forms.

Can the half dozen leading dramatists of the age, can their numerous imitators, do so poorly what we know they have done, that the audiences which view their plays may go on forever viewing, yet forever failing to comprehend them? Can these artists charge their pieces with the dynamite of a new idea, and leave the public deaf to the ensuing explosion? Inconceivable indeed! Where Ibsen and Hauptmann depict society as a destroying force, the spectator will see it as a destroying force. And if he sees it as such, will he remain insensate as to his power to mend, as a part of society, what society has done wickedly or mistakenly? It is hardly believable that he should fail to realize his position, if only dimly. He will see what society is doing; in some degree he will feel himself a part of society, in some degree he will realize the possibility of altering it.

Of this much logic assures us. But history repeats this assurance. Some evidence we have of the actual emotional effect of various modern dramas, and such testimony as exists is clearly to the fact that the audience that watches plays such as *Ghosts* and *The Weavers* not only *should* feel shame and hope, but actually does.

Let us notice this evidence. It comes to us mostly not as direct testimony, but in the form of manifestations—in word or deed—on the part of the spectators of our modern tragedy. Naturally, then, it requires interpretation. For instance, we have the reviews of *Ghosts* written by Mr. Clement Scott of the *Daily Telegraph* and Mr. A. Watson of the *Standard* on the occasion of the first presentation of *Ghosts* to a London audience. In the eyes of these critics—and the fact that *Ghosts* is now forbidden the English stage is indicative that they roughly represent the attitude of a large body of Englishmen—in the eyes of these critics Ibsen's drama was something distinctly dangerous. Mr. Watson proposed its suppression. Both critics seemed fearful of its effect on the English public. The British government apparently shared this view.[16] How shall we interpret such a manifestation? We might say that it was a manifestation of British decency, of fear for the molestation thereof. And in a degree we might be correct in so saying. Yet common sense assures us that English modesty cannot be held wholly accountable. For our Britisher has a regard for a truth once he believes in it. And if *Ghosts* were simply too direct, but nevertheless true, we can hardly conceive of its receiving the abuse which was its lot March 14, 1891. And the critics themselves by objecting to the facts which the play presents, show us the real situation.[17] *Ghosts,* to critics and government, was a false picture of society. As a false picture of society, the play was considered dangerous. Just what the dangers which it held were supposed to be, we may not know. But it is very reasonable to conclude that when the picture Ibsen painted was rejected, something was felt in the nature of a fear that many beholders of the play might accept the picture, realize society as the culprit, and create dissatisfaction with the world as it existed. In other words, it is roughly implied in the hostile reception to *Ghosts* that *if* the spectator accepts the situation presented by the play, he will feel uneasiness, shame, and with these feelings some sort of a desire to change matters.

---

[16] For an interesting if prejudiced account of the reception given Ibsen's tragedy, see Mr. G. B. Shaw's *The Quintessence of Ibsenism*, 3 ff. Brentano's, New York, 1905.

A tacit implication that the audience will see the tragic Antagonist in social circumstances, and will be moved, perhaps to action, at least to dissatisfaction, seems to front us in the case of *The Weavers* as well as in that of *Ghosts.* For the German government prohibited the production of Hauptmann's drama, with its picture of oppressive economic conditions. In conjunction with the government prohibition we have much critical opinion suggestive of the emotional effect of the play. Albert Soergal says, "Not only the German people but the whole civilized world has cause not to let this portrayal be forgotten, in order to prevent the return to such shameful conditions." [18] "He paints the picture," says James Huneker of Hauptmann, "the audience draws the indictment." [19]

In a similar way Galsworthy's plays seem to affect the audience. The hostile Mr. Howe says of them: "Our tragic emotion in the face of Mr. Galsworthy's drama would be expressed in such words as: 'Yes, I suppose that's quite true. What are they going to do about it?' We may go so far as to wonder quite actively what ought to be done." [20] We know that in at least one case, that of *Justice,* a change in laws has followed the Englishman's portrayal of tragedy-making conditions.

The identical quality of making the audience see the source of woe, and feel its ability to alter this source, seems present in the works of M. Brieux. Mr. Clayton Hamilton suggests the effect I speak of when he says of M. Brieux's *The Red Robe,*—"Not only is it enthrallingly dramatic, but also its attack on the iniquity of the French judicial system is immediately pertinent to the iniquity of our own politics." And shortly after making this statement he indicates the attitude of the American audience toward the modern serious drama in general in the statement: "*Damaged Goods* made money, because the people wanted to listen to a lecture on syphilis; *Maternity* will not make money because people do not want to listen to a lecture on motherhood." [21]

---

[17] *Ibid,* 6.

[18] *Dichter und Dichtung der Zeit,* by Albert Soergel.

[19] *Iconoclasts,* by James Huneker, p. 8. Chas. Scribner's Sons, New York, 1908.

[20] *Fortnightly Review,* C, 739.

I could go on to cite evidence of public feeling in parallel cases of less important dramas. American society, for instance, has manifested a sort of shame, a sort of will to action, in the face of such plays as *Kindling, Fine Feathers, Bought and Paid For,* etc. True enough it is that the manifestation is definitely seen only in comment, but it is sufficient for us to see the psychological reaction, for it is with this, and not with actual social changes, that we are concerned. I think that the reader will supplement from his own reading and experience the evidence I have given concerning the attitude of the audience toward our modern tragedy. To give further instances would be to do what is unnecessary because so easy,—to swell the quantity without changing the quality of the proof.

Aristotle gave the emotional effect of the tragedy he knew in the following sentence: "Tragedy . . . is an imitation of an action that is serious, complete, and of a certain magnitude; . . . in the form of action, not of narrative; through pity and fear affecting the proper purgation of these emotions." [22] As I have pointed out, tho the emotional effect has been altered, until the nineteenth century the phrasing of the ancient critic has covered the various changes which have taken place. It does not seem, however, to cover many examples of modern drama; in our twentieth century tragedy the spectator feels more than pity and fear. Let us say, then, that for such dramas as we have examined in this study, the phrasing definitory of emotional effect should read "thru pity, fear, and shame effecting the proper purgation of these emotions, and with shame arousing a will toward changing certain conditions of human life, and a hope that such change as is desired may take place." This re-definition will cover elements in the emotional effect of our modern tragedy which the long-used definition of Aristotle does not include.

---

[21] *The Bookman,* XL, 639-640.

[22] Aristotle's *Theory of Poetry and the Fine Arts,* p. 23. S. H. Butcher's translation. Macmillan, London, 1907.

THE MAIN SOURCE OF SPEECH-SOUNDS AND THE MAIN CHANNELS OF THEIR SPREAD

HERMANN HILMER

THIS ARTICLE is the outgrowth of ideas first advanced in a book on "Schallnachahmung, Wortschöpfung und Bedeutungswandel" which I published some time ago.[1] Some of the arguments and illustrations in that book are repeated here, as far as seemed necessary for the present purpose. That this article was written is in no small measure due to Professor Flügel, who, from motives of friendship as well as of scholarship, discussed with me the different phases of my book and thus stimulated me to further develop and formulate my theories. The thoughts that thus took shape under the spell of his personality may perhaps not be unworthy as homage to his memory.

Language is a means of communicating concepts through speech-sounds. A speech-sound associated with a concept in the minds of the people speaking a common language is called a word. The relationship among words is due to the association of concepts with each other. The speech-sounds, being merely symbols, cannot affect the association of concepts, although they may and do help us in tracing them. The question, therefore, whether there are universal and definite trends in language growth, resolves itself into an inquiry whether there are universal and definite trends in the associations of concepts.

Associations of speech-sounds and concepts with each other may be due either to "original" (primary) association, in which case the speech-sound stands for no other concept at the time this association is made; or to "transference," in which case the speech-sound is bound up with another concept at the time the new association comes about.

Associations by transference take place through the medium of a sentence. The term 'sentence' as used here signifies not merely the syntactical structure so called, but any expression in language which conveys a complete thought. It may consist of a single word, its meaning being fixed more definitely by the circumstances under which the word is uttered. By means of the sentence it is possible to define or limit the meaning of a word in such a way that its concept changes. For instance the verb "to grasp" meant originally no doubt "to take hold of some physical object." By using the word in the sentence "he grasps the problem," it takes on an entirely different signification, namely, "to understand." If this new meaning becomes established in the minds of the people of a community, independent of a sentence, then the process of associating the speech-sound with this new concept is completed. Along with the new association, older meanings of the word may continue to exist. Most words as one finds them listed in the dictionary stand for quite a number of different concepts.

---

[1] Verlag von Max Niemeyer, Halle a/S, 1914.

The fundamental forms of language are the noun (together with the adjective) and the verb, in accordance with the physical universe as reflected in the human mind. All other word forms are either derived from these or (if in some cases one may speak of other words as due to original associations of speech-sound and concept) they are negligible as far as this investigation is concerned. This article, then, has to do merely with nouns and verbs, and to some extent, in a supplementary way, also with adjectives.

An analysis of any language will show that there are two fundamentally different means by which speech-sounds may be transferred. It is of the utmost importance that they be clearly understood and distinguished. In fact, one of the main reasons why the science of semasiology has not yielded any really tangible results thus far, is the failure to make this distinction.

In the first place, the speech-sound may travel from concept to concept without change of form (excepting gradual phonetic changes) or of grammatical function: that is, a noun remains a noun, a verb a verb, and an adjective an adjective. The direction of this kind of transference, which will be called 'direct transference,' is from a less complex to a more complex concept and from a concrete to an abstract one.[2] The important point to be noted is, that the speech-sound moves only *in one direction* and *cannot go back over the same route.* Thus one may call a human being on account of his clumsiness "a lump," which means originally a shapeless mass; but one cannot reverse this process and call a shapeless mass "a man," because a man, even a clumsy one, has characteristics that do not pertain to a shapeless mass. Similarly, one may refer to an inexperienced person as "green," because green generally is the color of unripe vegetation; but it would not occur to anybody to speak of a green color as "inexperienced."

---

[2] As concrete concepts are considered all concepts which are based directly on sense impressions. However, the matter is more complicated than can be stated here.

Second, the speech-sound may be transferred by "composition." This term, as used here, implies not only the putting together of speech-sounds and the corresponding merging of their concepts, but it stands likewise for cases in which the speech-sound changes its grammatical function, even if its outward form remains the same; for instance, when in English the word "house," meaning a dwelling, is used to point out the action of putting someone or something into a house, as in "to house the people who have lost their homes." To class such a case as composition may be justified, on the ground that in changing the grammatical function of the word, as determined by its position in the sentence, some formal element is added to it which was not there before. Through composition a speech-sound may travel in almost any direction (excepting in a few special cases which will not be considered here), for the possibilities in this respect are as great as is the power of the human mind to associate the most different concepts with each other.

If the speech-symbols traveled only by direct transference, or if this development proceeded separately from composition, it would be an easy matter to trace the channels through which language develops. In reality, however, these two kinds of transference are inextricably interwoven. A speech-sound may travel for a certain distance through direct transference, in other words in a definite direction away from its starting point; then by composition it may change its course entirely and possibly get back again to the point from where it started. As a word in itself bears no evidence of the concepts its speech-sound may have been associated with before it reached the place where it is encountered at a given time, it is in most cases impossible (excepting for what light one may be able to get by comparing words of similar phonetic structure) to trace its course.

The foregoing considerations make it plain that our search for universal and definite trends in language growth is doomed to failure from the outset, if we start from complex concepts. The fact that such concepts are sometimes named by original association does not alter this, for under but slightly different circumstances the concept in question might have received its speech-sound by one of the possible associations through transference which its complexity would invite. As the conditions under which such a complex concept may be conceived are too numerous and unstable to admit of analysis, its association with this or that speech-sound in preference to others may be regarded as accidental. For instance, the English dialect word "knock" meaning a clock, may be assumed to have originated through the imitation of the sound of a clock. But the clock, for all we know, might just as well have been called a "watch," a "dial," a "time-piece," a "chronometer," or even a "timer," an "hour-teller," a "day-divider" or by some other name not yet found in the dictionary; just as the Germans call the same thing "uhr" and the French "horologe," from the Latin "hora" and "horologium."

The ideal starting point for our investigation would be a concept of such a nature that any person, in any place, at any time, under any circumstances could not name it otherwise than by original association. If there existed such concepts, they must be based upon sense impressions pure and simple, obtained in such a way that they precluded any analysis, so that the mental activity of all persons undergoing them, from the most inexperienced child to the wisest man, would be at zero.

Such absolutely ideal starting points are of course impossible, for there is nothing in nature within human ken which might not under certain conditions be analyzed by someone. Nevertheless there are some concepts which approach this ideal very closely. For this investigation only those of them are important that are obtained through the sense of sight; all others are negligible. Sound impressions, although of relatively slight importance as bases for concepts, have however, great significance as models for speech-sounds. This will be considered further on.

The concepts in question are of two kinds: First, the three most general concepts of outline (or of things, inasmuch as the outline establishes the material existence of a thing), namely, of a mass,—that is of a physical unit without definite shape; of a projection, that is, the outline of a mass which rises above a background; and of a depression, that is, the outline of the imprint of a mass into a background. Second, the simplest concepts of action; namely, of short, relatively quick motions of things in one direction,—as a blow or a fall.

All these concepts, it will be noted, are very vague. They must be so of necessity, as the impressions on which they are based must be fleeting and without interest to the person experiencing them; for as soon as a thing or an action arouses the interest of the observer, he will analyze it, and the chances that the resulting concept will be named by original association becomes less in the measure that he does so. This consideration leads to the question, why concepts depending upon such fleeting and uninteresting impressions should be associated at all with speech-sounds; for nobody, it would seem, will give a name to something in which he is not interested. The answer is that such associations suggest themselves without any mental effort, inasmuch as the phenomena which induce the concepts in question are bound up with sound,—namely, the sound of a body striking another. The imitations of such sounds become the symbols for the concepts so induced.

Thus arise three kinds of words: namely, first, names for the sound itself, as "dump, the sound of a heavy body falling, a thud"; second, names for short, quick motions, as "dump, to strike with a dull, abrupt thud"; third, names for a mass (or a mass forming a projection), as "dump (chiefly U. S.), a pile or heap of refuse or other matter 'dumped' or thrown down"; or a depression, as "pit, an indentation like that made by a raindrop in the sand." (Cf. "pit, the sound of something small striking, as a raindrop.") Phenomena which may give rise to these three kinds of words are quite frequent. They must have been among the very first which human beings perceived and named, and they are still the most common occurrences. A few examples may be pointed out: A piece breaks off from a rock or a tree, falls to the ground with a thud, and comes to rest as a mass or a projection, or it causes a depression in the ground. A raindrop falls and imprints its shape on the sand, or the foot of a human being or of an animal makes a track. A human being throws a stone, or he hits something with an implement and knocks off a piece, or he cuts a chip out of something, thus causing a depression. Such examples may easily be multiplied. Needless to say, other concepts than the ones mentioned may likewise be associated with the sound of a blow and named after an imitation of that sound; for instance, the concepts of many implements. But as such concepts are of a complex nature, involving ideas of purpose, utility, etc., in addition to images of refined and complicated outlines, they are quite liable to be named by transference, and hence do not concern us here.

The number of speech-sounds that may be used as imitations of the sound of a blow is very large. The best imitations are generally monosyllabic roots with short vowels and final stops. There is, however, some latitude in this respect. Differences in the sound perceived are to some extent graded in the imitations. This is particularly true of the vowels. A dull, heavy sound, such as proceeds from a heavy body striking, is generally represented by the "u" vowel, possibly by the "o"; while the "i" preferably imitates a light sound. Differences in the consonants, as indicating different kinds of blows, are not so easily accounted for, although in some cases even that is possible. The speech-sounds actually chosen as imitations depend, of course, on the language in which they are used. A German, for instance, will not use a symbol like "thud," for the simple reason that he is not in the habit of pronouncing such a sound.

Speech-sounds that are already associated in the minds of a community with definite concepts will, naturally, not be allowed to enter the language as imitations, as long as the old association persists. This is the general principle; but the matter is more complex than may be stated and considered here. The principle, however, can be reasoned out. If, for instance, one perceives a foot making a track, a depression, in the ground, quite a number of sound imitations as names for this depression may suggest themselves: as "track, tack, tap, pat, hack, etc." Let us suppose now that "tap" becomes the name for a depression in the ground made by a human foot. It is plain that as long as this association persists no other imitation would enter the language as a symbol for such a depression. But if the symbol "tap" travels on to some other concept, if, as may easily happen, it becomes the name for a vessel (cf. Bav. dial. "tapp, Gefäsz in welches die Milch zum Rahmen gegossen wird"), then the path would be clear for some other imitation, say "track," to be associated with the concept of a depression made by a foot. The speech-sound "tap," on the other hand, as long as it remained in the language, would prevent a new imitation "tap" from entering. But let us suppose that the word "tap" underwent a phonetic change: that it changed to "topf" (cf. "Topf, tieferes Gefäsz von Ton oder Metall"); then, it is plain, the path would be clear for "tap" to enter the language again, other circumstances permitting. Thus the two factors, change of meaning and change of sound, act as gatekeepers, so to speak, which control the entrance of imitations into the language. It may be stated in passing that language growth not only in its initial stages but as a whole is subject to these two forces.

The origin of a word from sound imitation is not always evident. This may sometimes be due to the fact that the speech-sound in question is a very poor imitation. Far more important in this respect, however, is the meaning of the word. Other conditions being not unfavorable, original associations due to sound imitation are easily recognized as such when the word designates the sound itself. If the word points out a motion which is apt to produce a sound, its onomatopoetic origin is usually likewise evident. But if it refers to a thing, especially to a lifeless and motionless thing, its origin from sound imitation is not evident. The following examples will illustrate these different cases: "dump, the sound of a heavy object falling." Seeing that the speech-symbol corresponds to the sound that the concept points to, this word will readily be recognized as due to sound imitation. A somewhat different concept associated with "dump" is the following: "a fall of a heavy object producing a dull sound." Here the concept has reference no longer directly to the sound, but to a motion; but since the sound is a determining factor in the description of the motion, this word, too, will impress most English-speaking persons as onomatopoetic. Less apparent is this in "dump (chiefly U. S.), to throw down in a lump or mass, as in tilting anything out of a cart"; although the concept of a heavy body or mass thrown to the ground is very apt to conjure up the idea of a sound such as is bound up with such a fall, especially since the speech-sound "dump" points to it. With the word "dump, to unload," where the concept has reference to a falling and striking mass only indirectly, we would need special circumstances to remind us that the word arose from sound imitation. Least of all is one likely to connect the idea of sound with a mass that has no apparent connection with sound or motion, such as is indicated in the word "dump, anything short, thick, and heavy." To get on the track of the possible onomatopoetic origin of such a word, it is necessary to realize that it may proceed from the same phenomenon which gives rise to the first word of this series, namely "dump, the sound of a heavy object falling."

The number of such imitations entering the language of a highly developed people is comparatively small at a given time, but amounts to a large number in the course of centuries. Their significance, however, does not lie merely in this, but above all in the vast opportunities for further transference that their original association with the three most general concepts of outline and of short, quick motions offers. (The concepts of the sounds of short, quick blows will be omitted from further consideration, seeing that there are but few concepts in the realm of sound beyond those originally associated with speech symbols.) To get a clear view of this, it is advisable to eliminate some factors which might perhaps obscure the issue. First: All phonetic changes and the complications they involve will be taken for granted. Second: Language has developed with man; there never can have been a time when there were not speech-symbols for all the concepts current in a community; in other words, there never can have existed a "clear track," so to speak, for all the possibilities of transference for a given speech-sound. We will, however, assume such a clear track, and furthermore we will imagine that there existed at the time all the *original* associations of concepts and speech-sounds that would come about under normal conditions. Third: The number of original associations in a language at a given time is comparatively small, but many concepts (particularly those with which this investigation has to do) are associated over and over again with new symbols, the old ones passing on to other concepts, unless they get lost altogether. To simplify matters, we will regard all the speech-sounds that in the course of time become originally associated with one and the same concept as a type, and speak of them as of one symbol. Fourth and last: We will eliminate all transferences by composition, so that we have to deal only with direct transferences. This step is justifiable on the ground that composition is possible only on the basis of the vocabulary developed through direct transference from original associations, and that, in general, the speech-symbols which start with the best chances for direct transference (on acount of the nature of the concepts with which they are originally associated) would likewise have the best chances for transference by composition. Moreover, the basic concepts in the human mind are the concepts of forms and actions; and these are, even in a highly developed stage of civilization, as a rule most conveniently named by direct transference, as far as they are not associated *originally* with speech-symbols.

These obscuring factors eliminated, it is now possible to get a clear view of the opportunities for transference of speech-sounds originally associated with the three most general concepts of form and with the concepts of short, quick motions, as over against the opportunities of speech-sounds originally associated with any other concepts. First, the three most general concepts of form (or of things, inasmuch as the outline determines the thing) will be compared with other concepts of things; and second, the concepts of short, quick motions (the most fundamental concepts of action) will be compared with other concepts of action.

The original association of speech-sounds with each of the three most general concepts of things may arise, as has been pointed out, from one and the same phenomenon. Moreover, a speech-sound may be transferred from the concept of a mass to that of a projection, and vice versa, seeing that a projection may conjure up the concept (and with it the name) of a mass, and that a mass may remind one of a projection. Similarly, the concepts of a projection and a depression may exchange their symbols, because one and the same sight impression may give rise to either the concept of a projection or that of a depression—it depends on the point of view. In addition, there are other opportunities, too complicated to be considered here, for the interchange of the symbols of these concepts. From these considerations it is advisable not to deal separately with the three channels of development which start from the original names for a mass, a projection, and a depression, but to treat them together.

The concepts of a mass, a projection, and a depression are the *least complex* concepts of things possible; hence speech-sounds traveling by direct transference must—in accordance with the law explained before—move away from these concepts and not towards them. Furthermore, these concepts are likewise the *most general* concepts of things; hence speech-sounds associated with them can reach either immediately or by successive steps any other concepts of things. This fact would not be so very important if the large number of other concepts of things which are within immediate reach of the speech-sounds proceeding from the three most fundamental ones, were likewise liable to be named by original association. But this is not at all the case, for most of the things in question are silent and motionless, and preclude that possibility.[8] Some things, especially implements, may be named, under favorable conditions, after the sound issuing from them. The concepts of these things, however, contain, in addition to the image of definite outlines, ideas of purpose, utility, etc.; and this condition does not offer their symbols favorable chances for spreading far to other fields of concepts by direct transference. The relative importance of the symbols originally associated with the concept of a mass, a projection, and a depression as over against the symbols originally associated with any other concepts of things, may be illustrated by the picture of the system of pipes supplying a city with water. If a fluid of a certain color, say green, should be forced into the mains at the pumping station and at the same time other colors into a number of small branch pipes, then these other colors would of course reach a number of districts before the green color could get there, but the area of these districts would be insignificant compared with the territory covered by the green. The speech-sounds associated with the concepts of a mass, a projection, and a depression correspond to the green fluid.

In reality, of course, direct transference cannot be kept apart from composition, as has been explained. There are, however, a large number of things so constituted that they are, as a rule, most naturally and conveniently named directly after a mass, or a projection, or a depression. These are particularly objects in nature and some other things with which one associates generally no other idea than the image of their shape. Of this English and German, especially the dialects of these languages, offer abundant proof. Thus from the concepts of a mass or a projection are transferred names for the most varied kinds of bodies, lumps, chunks, blocks, knobs, knots, etc.; and furthermore, names for all sorts of projections and elevations, from the tiniest speck to the mightiest mountain, from the gently rounded hill to the steepest cliff, from the point to the edge. Then there are projections which lie in a plain, as corners, angles, bends, jetties, etc. In the same way the original symbols for a depression pass on to the concepts of all kinds of pits, dents, holes, caves—in fact to the concepts of those things which present, so to speak, the opposite pictures to projections. Somewhat farther removed from original sources, but still in a direct line, are the concepts of a great variety of projections on plants, as buds, knots, knurls, nodes, fruits; and on living creatures, as knuckles, joints, bones, and other projecting parts; as well as many projections and depressions on things made by man, for instance, on buildings. Many designations for human beings, especially for children, have no doubt arisen from original names for a mass; words like, "knabe" (knappe, knave), "kerl," "knecht" (knight), "knirps," "bube," "kind," and many others found in the dialects. The names for a mass or a projection frequently descend to four groups of concepts, which have increasing degrees of complexity, in such a manner that the speech-sound may reach the most complex concept either directly or through the intermediary other groups. They are: first, the concept of a heap; second, of a bundle; third, of a bunch, a cluster, or a tuft; fourth, of a group of things. The whole series presents the picture of a mass or projection unfolding and finally splitting up into fragments. Of this origin are most words of the type of German "Haufen," "Hocken," "Stapel"; English "pile," "stock"; German "Bund," "Pack," "Bunch," "Büschel," "Busch," "Garbe," "Schopf" (Haarbüschel); English "shrub," "brush," "shock," "hair"; also German "Gras," "Halm"; English "tuft," "bent," "reed"; German "Gruppe," "Heer," "Schar," "Schock" (Masz); English "throng," "school" (number of fishes). From original names for a depression are derived numerous names for vessels, as German "Becken," "Schale," "Napf," "Fasz"; English "bin," "bunker," "vessel" (vat). From the concept of a vessel (container) the speech-sound frequently passes on to that of a ship. Many of the older names for ships are undoubtedly of this origin. Of course, modern ships, which are so much more than mere floating containers, are more likely to receive their designations according to some special characteristic, hence by composition; thus have arisen names like "steamer," "cruiser," "liner," "tanker."

---

[8] An analysis of all the possible sources of speech-symbols cannot be attempted here; it will be found in the book mentioned before.

As pointed out and illustrated by the examples given, concepts of things are likely to be named by direct transference, if the image of outlines is the dominating factor. If some special characteristic is emphasized the thing in question is more conveniently named by composition. This principle establishes the border-line between the two modes of associating speech-symbols by transference. This border-line is, of course, not sharp and definite; the two territories frequently overlap and sometimes interpenetrate deeply.

Complex concepts must not be confused with abstract ones. Among the latter there are many which may be named most conveniently and naturally after some simple concept by direct transference: for instance, a difficult problem may be called in German a "knoten," after the knot in a rope; a word that has come about, no doubt, through associating the hard lump (the "knoten") in a rope with any hard lump, which was known by the name of "knoten."

The second important kind of concepts which are named after the sound of a blow are the concepts of short, quick motions. These concepts bear the same relative importance to other concepts of action as do the three fundamental concepts of outline to other concepts of things; and the simile of the system of water-pipes used above in reference to concepts of things applies likewise to concepts of actions—with due allowance, of course, for the difference between things and actions. The origin of the symbols for motions from sound imitation is much more evident than is the origin from the same source of symbols for a mass or a projection or a depression. On the other hand, it is not possible to determine the starting points of the symbols for concepts of motions so exactly as the starting points of the symbols for the three most fundamental concepts of things; for every short, quick motion is apt to conjure up the impression of the sound of a blow, even if the motion does not produce an audible sound,—in fact, even if it does not hit anything. It is therefore in many cases impossible to judge whether the word is due to original association or to transference. Frequently, no doubt, both these causes have their share in establishing and fixing it in a community. In the measure that the concept contains more and more abstract ideas—as of purpose, utility, etc.—along with the image of the moving thing, the likelihood that the concept owes its symbol to original association becomes less. The following series of words, taken from German dictionaries, will make that clear: "Tapp, zur bezeichnung des schalles, den etwas auf- oder zusammenschlagendes erzeugt." "Tapp, klappender schlag, klaps." "Tappe, ein schlag mit der hand." "Tappen, komish-verächtlicher ausdruck für plumpes, ungeschicktes zugreifen." "Tappen ertappen, erwischen, ergreifen." "Tappen, sich an einen ort im finstern tappen, oder von einem blinden, tappend mit den händen vorher fühlend, suchend sich an einem ort finden." "Tappen" is used furthermore in German in an entirely abstract sense, namely that of thinking hesitatingly and carefully along certain lines.

The direction of the speech-symbols moving by direct transference through the field of concepts of actions, is frequently determined not merely by the factor of a motion inherent in all concepts of actions, but likewise by the nature of the thing moving. The series of words just quoted is an illustration of this. Of course this does not preclude that the speech-sound associated with the concepts of the motions of one thing may become associated with the concepts of motions of another thing or other things. A further discussion of the possibilities in this respect will be found in the book referred to before.

Concepts of action which emphasize other activities than that of a simple motion are likely to be named by composition; as, "to finger" after the noun "finger." There is, however, no sharp line between direct transference and composition. Concepts which contain the idea that a certain definite thing or a characteristic (adjective-concept) is to be made, must of course receive their speech-symbols from the concept of that thing or characteristic; for it is impossible to conceive that a certain thing or characteristic is to be produced if the image of that thing or characteristic, and with it its speech-symbol, is not clearly borne in mind. Thus the verb "knot, to make or tie a knot," is formed on the noun "knot, a complication in a string"; and the verb "blacken, to make black," on the adjective "black, the darkest color."

The preceding argument aims to show that the speech-sounds derived from the imitation of the sound of a blow (action of one thing striking another) must (on account of their original association with the three fundamental concepts of outline and the fundamental concepts of motions) become associated, through direct transference, with a by far larger number of concepts of things and actions than can be reached through this means by all other speech-sounds taken together. Seeing now that things and occurrences (or actions) are the only phenomena which may be pointed out and named independently of any previous associations,[4] it follows that the imitations of the sound of a blow must be the foundation for the larger part of the entire vocabulary of a language.

---

[4] All concepts which are not things or actions presuppose comparison or some sort of analysis. After a language has developed a certain vocabulary, it is of course possible to define and arbitrarily name any concept; but as a source for further and far-reaching development such cases have comparatively little importance.

A word remains to be said about the development of the adjective. The concept of an adjective depends on analysis. It is impossible to conceive it without putting at least two concepts of things with a common characteristic side by side for comparison. The most natural way of associating the concept of a characteristic (adjective) with a speech-sound is obviously that of referring to it by means of the name of a thing which has that characteristic in a pronounced measure. This is, in fact, the origin of the names of most colors. After the idea and the form of the adjective have become the property of a community, this process of naming adjectives is simple enough; yet it must have taken ages to develop it, for it marks the first step in analysis—in other words, the first stage in the development of the thinking man.

Most names for concrete adjectives (color, shape, size, density, etc.) must have been derived from names of things, direct transference of speech-sounds between concepts of concrete adjectives being likely only within narrow limits. There is, of course, nothing to prevent transferring speech-sounds by this means from the concept of a concrete adjective to that of an abstract one. That many abstract adjectives may be named by composition, after a verb, is likewise self-evident.

The importance of the imitations of the sound of a blow in language development is not apparent in the language of a highly developed community, for the number of new imitations of that type which enter within a short period—say the lifetime of a human being—is small as compared with the total vocabulary; and the older word-roots of the same origin have as a rule changed so much either phonetically or semasiologically, or in both these respects, that in many cases all traces of their source are obliterated. Nevertheless, by comparing the sound imitations of blows and the words evidently derived from them in a number of related languages, especially in related dialects, it is possible to obtain an ideal picture of the main lines of development from this source. Abundant material of this sort will be found arranged in my book on "Schallnachahmung, Wortschöpfung und Bedeutungswandel." On the strength of this material I do not hesitate to assert that at least three-fourths of the vocabulary of the Germanic languages (most likely it is even a larger part) goes ultimately back to imitations of sounds of blows.

The stream of words that flows from this mighty source as compared with the total vocabulary of a language might be likened to a huge river constituting the main supply of a large body of water,—for instance, as the Volga feeds the Caspian Sea. The water of the Caspian Sea is salt and different from that of the Volga, yet it is principally the Volga that maintains the Caspian Sea and has maintained it for ages. In a similar manner is the ocean of words in a language different from its main supply, namely from the mighty stream that goes back to the imitations of sounds of blows. Furthermore, as the current of the river may be followed up for long distances even in the salt water before it finally disappears, so may the current from which the ocean of words is principally fed, be pursued deep into the language before all traces of it have disappeared.

NOTES ON "FLOIRE ET BLANCHEFLOR"

OLIVER MARTIN JOHNSTON

OF THE two old French poems on Floire and Blancheflor, one is known as the aristocratic version and the other as the popular version.[1] The latter, which is very much inferior to the former, has been preserved in only one manuscript, and that is of the fourteenth century. The Bibliothèque Nationale at Paris contains three manuscripts of the aristocratic version, which may be designated as A, B, C. Du Méril claims to have made use of all three of these manuscripts in the construction of his text, but, as will be seen in the following notes, the different manuscript readings did not always receive the consideration that they deserve.

1. "Mais qui li porroit si tolir
Qu'ele n'en estéust morir, 310
Cou m'est a vis plus bel *seroit*."
Li rois respont tout *entreset:*
"Dame," dist il, "et jou l'otroi;
Consilliez en et vous et moi."[2]

In the passage just quoted Du Méril follows Ms. B. in making *seroit* rime with *entreset* (= *entresait*[3]). Ms. A. reads as follows:

Cou m'est avis plus bel *seroit*.
Li rois la dame *respondoit*.

The difficulty in the reading found in B lies in the fact that according to the statement of grammarians[4] *oi* was not pronounced *wɛ* until considerably after the date of the composition of *Floire et Blancheflor,* which was probably written between 1160 and 1170. The poem could not have been written later than 1170 as that is the date of the earliest foreign imitation of the French version. With reference to the earliest examples of *oi* pronounced *wɛ*, Nyrop says:[5] "Vers la fin du XIIIe siècle, le group oi, quelle qu'en soit l'origine, s'altère et finit par passer à une nouvelle articulation [*wɛ*],[6] tout en restant graphiquement intact." However, the language of our poem seems to indicate that the author was an Anglo-Norman.[7] If this be true, *seroit* and *entreset* were doubtless written *sereit* and *entresait* (or *entreseit*[8]) in the original. The rime *ai* : *ei* would then offer no difficulty, as examples of it are found in Anglo-Norman texts of the twelfth century.[9] With reference to the examples of *ai* : *ei* found in Chardry,[10] Mussafia says:[11] "Wenn *ai* : *ei* nur 6 mal gegen 80 von *ai* : *ai* erscheint, so hängt Diess davon ab, dass fast alle Fälle von *ai* : *ai* lat, *habeo* (im Praesens und Futurum) betreffen, so dass alle diese Stellen eigentlich nur eine einzige ausmachen; sieht man von derselben ab, so ist die Anzahl der Fälle von *ai* : *ai* kaum grösser als die von *ai* : *ei*." Examples of *ai* (written *ei*) riming with *ei* in the works of Simund de Freine are:

---

[1] For a discussion of the characteristics of these two versions, compare Du Méril, *Floire et Blanceflor*, Paris, 1856. pp.. xix-xxi.

[2] Unless otherwise stated, references will be to the edition of Du Méril.

[3] Other examples of *oi* riming with *ai* in B are:

Il li otroie a moult grant *paine;*
Volentiers i trovast *essoine*.
(vv. 355-6)
Or m'escoutez; je vous di*rai*
Le meillor conseill que g' i *voi*.
(vv. 1892-3).

[4] See *Grammaire historique de la langue française*, Leipzig and Paris, 1899, par. 158; Meyer-Lübke, *Grammaire des Langues Romanes*, I, pp. 95-97.

De pussance plus *dirrei*:
Bunté nule n'ad en *sei*.
(*Le Roman de Philosophie,* 819-20.)
Ore entendez plus a *mei*.[12]
Un essample vus mettrei
Par ki savrez sanz dutance
Ke malveis hom n'ad pussance.[13]
(R. Ph. 1481-4.)

---

[5] *Op. cit.,* par. 158.

[6] For the phonetic symbol used by Nyrop I have substituted that of the Association Phonétique.

[7] See p. 7.

[8] See *The Anglo-Norman Dialect,* by L. E. Menger, New York, 1904, p. 51; "In this connection Uhlemann notes that in Anglo-Norman *ei* for etymological *ai* is frequent."

[9] See *Les Oeuvres de Simund de Freine,* by John E. Matzke, Paris, 1909, pp. xxiii-iv.

[10] Regarding the date of Chardry, Menger (*op. cit.,* p. 22) says: "Since the London MS. was written before 1216, the original must have been composed in the course of the twelfth century."

[11] See *Zeitschrift für rom. Philologie* III, 593.

[12] For other instances of *ai* riming with *ei* in the works of Simund de Freine, compare Matzke, *op. cit.,* pp. xxiii-iv.

[13] With reference to the date of the writings of Simund de Freine, Matzke (*op. cit.,* p. xi) says: "Les deux poèmes appartiennent, selon nous, à la fin du XIIe siècle."

2. Floire, the son of king Félis of Spain, and Blancheflor, the daughter of a Christian slave, grow up together and love each other tenderly. The king seeing that his son loves Blancheflor resolves to have her slain as soon as possible. The queen having opposed this plan, however, they decide to send Floire to Montoire, promising him that Blancheflor will join him soon. Floire goes away sad and at the end of a week begins to grieve and refuses to eat. As soon as the king learns the result of the separation of the two lovers he proposes again to have the young girl slain. The queen still refuses to give her consent and suggests that it would be better to sell her to some merchants going to Babylon. With reference to the interview between the king and the queen and the king's decision to sell Blancheflor to the merchants, our poet says:

La roïne li respondi:
"Sire," fait el, "por Diu merchi!
A cest port a moult *marcéans*
De Babiloine, bien manans.
Au port la fai mener et vendre:
Grant avoir pues illoeques prendre.
Cil l'en-menront; car moult est bele:
Ja n'orrez mais de li novele.
Si en serons delivre bien
Sans estre homecide de rien."
Li rois a grant paine l'otroie:
Par um *borgois* au port l'envoie,
Qui de marcie estoit moult sages
Et sot parler de mains langages.
Ne la fist pas par convoitise
Vendre li rois en nule guise:
Mius amast qu'ele fust finée
Que de rouge or une navée
Le pechié crient, por cou le lait.
Li *marcéans* au port s'en-vait,
Et a eus offre la pucele,
Que l'acatent: car moult ert bele.
Cil l'acaterent maintenant
(Car moult est bele par sanblant)
Trente mars d'or et vint d'argent, etc.

Regarding the lines beginning with v. 422, Du Méril says: "Les vers suivants sont probablement altérés; mais comme ils manquent dans B, nous n'avons aucun moyen d'améliorer avec certitude le texte du ms. A."

A form that might give rise to difficulty in the interpretation of the passage quoted above is the word *marcéans* in v. 422. In v. 405 the author uses *marcéans* in speaking of the merchants to whom Blancheflor was sold. It seems fairly certain, however, that *marcéans* in v. 422 refers to *borgois* (v. 414). If *marcéans* (v. 422) and *borgois* refer to the same person, the meaning is perfectly clear.

Du Méril is wrong in using *que* in v. 424. Both A and C, the only manuscripts containing this portion of the text, show *qui*. *Que l'acatent* is meaningless. On the other hand, if *qui* is substituted for *que*, the line offers no difficulty whatever, the antecedent of the relative being *eus*, which refers to the merchants who bought Blancheflor. There does not seem to be any reason therefore for believing that the text of the passage under discussion is corrupt, as Du Méril supposed.

3.

Cele piere qui sus gisoit,
De tres-fin marbre faite estoit,
Inde, jaune, noir et vermeil:
Moult reluisoit contre soleil.
Si fut entaillie environ
De la *trifoire Salemon.*

Regarding the phrase *trifoire Salemon,* Otto Söhring says:[14] Dies scheint mir eine Vermischung zweier häufiger Wendungen: *oevre trifoire* [an einem Turm in Part 822, einem Horn aus Elfenbein Perc. 28487, cf. auch trifoire als prad. Adj.: devers la ville erent trifoire | li mur . . . En. 445; weitere Belege zu trifoire subst. und adj. s. bei Godefroy VIII, 74. 75]—und oevre Salemon [Li pumiaus et li aigle en son | Furent de l'oevre Salemon Blanc. 4095; li arcon | furent de l'uevre Salemon En. 4075. li pecol e li limun furent a l'uevre Salemun Guig. 170 . . . cf. Du Cange VI, 42].

Beide Wendungen scheinen ungefähr dasselbe zu bedeuten, werden auch häufig zusammengestellt (En. 4075 ff.; Guig. 170 ff.).

The passage under consideration reads as follows in B:

Cele pierre qui sus gisoit,
Feite de moult fin marbre estoit,
Inde, jaune, noir et vermeill:
Moult reluisoit contre soleill.
Si fu entailliee environ
De la bonne *euvre Salemon.*

The reading of B (*la bonne euvre Salemon*) doubtless represents the language of the author. The phrase *oevre Salemon* is frequently used in old French.[15] With reference to *trifoire Salemon*, on the other hand, Alfred Dressler says:[16] "Was das heissen soll, ist mir nicht recht klar. 'trifore' wird im Eneas stetes und sonst meist als Adjektiv verdwendet (vgl. Godefroy)."

---

[14] See *Romanische Forschungen,* XII, p. 529.

4. Chiez un borgois sont *herbergié*,
Qui riches hom ert *au marcié*, 1200
Et notoniers, et marcéans.
(A and C)

Chies un bourgois sont *herbergié*,
Qui riches ert et *alosé*,
Notonier iert et marchéanz.
(B)

In a note on *ou marcié*, Du Méril says: "Cette fin de vers est sans doute corrompue; mais elle nous semble encore préférable à celle qui se trouve dans B; *alosé* ne ferait pas une rime suffisante." It will be observed that the editor of our poem regarded *ou marcié* as an unsatisfactory reading (*cette fin de vers est sans doute corrompue*), but preferred it to *alosé*, because he did not consider *herbergié-alosé* a satisfactory rime.

The confusion of *ie* and *e* is a well known characteristic of the Anglo-Norman dialect. In his edition of *Le Bestiaire de Philippe de Thaün* (Introduction, p. li), Emmanuel Walberg says: "Comme l'on sait, la confusion de *ie* avec *e*, à une époque où les dialectes du continent distinguaient encore ces deux sons, est un trait caractéristique de l'anglonormand." [17] In view of the fact that the verse of *Floire et Blancheflor* shows another Anglo-Norman characteristic, namely, the occurrence of four and sometimes six lines in succession with the same rime, is it not more probable that *alosé* was in the original and that it was changed to *marcié* by a scribe who was not familiar with the rime *herbergié-alosé?* Our text contains eighteen passages where four consecutive lines rime together and one where six lines have the same rime.

---

[15] Enmi la nef trova un lit,
Dunt li pecol e li limun
Furent a *l'uevre Selemun*
Taillié a or, tut a trifoire,
De cipres e de blanc ivoire.
(Marie, *Lais*, Guigemar, 170, Warnke.)
Trestot de l'uevre Salemon mout sotilment ovree.
(*De Venus la deesse d'amor*, st. 214, Foerster.)
. . . . . . li arcon
Furent de *l'uevre Salemon*.
(En. 4075.)

[16] See *Der Einfluss des altfranzösischen Eneas-Romanes auf die altfranzösische Litteratur*, Borna-Leipzig, 1907, p. 139.

[17] Compare also John E. Matzke, *Les Oeuvres de Simund de Freine*, Paris, 1909, p. xix.

L'amirals grant pris en *aroit,*
Cou m'est a vis, et mius *seroit.*
Et quant il l'engien en *saroit;*
Contregarder mius s'en porroit.[18]
(vv. 2735-38.)

"Grant doel en fist; caiens jou l'*vi.*"
Quant Floire l'ot, si *s'esbahi,*
Qu'isnelement li *respondi,*
Et dist: "Non frere, mais *ami.*"
De cou qu'ot dit se *repenti:*
"Mais freres, dame; jou *mesdi.*" [19]
(vv. 1523-28.)

With reference to groups of four and six lines riming together, Paul Meyer says:[20] "Quelques poètes, originaires généralement de Normandie ou d'Angleterre, admettent parfois quatre vers ou plus sur les mêmes rimes." [21]

5. Andoi li sont chéu as piés;
A grant joie *li* ont baisiés.
(vv. 2521-2.)

In Du Méril's edition v. 2522 reads:

A grant joie *les* ont baisiés.

Notwithstanding the fact that this line is the same in all three of the manuscripts, Du Méril substituted the accusative *les* for the dative *li*. The form used in his edition shows that he did not understand the construction in question. In such cases usage requires two pronouns, a dative and an accusative form. While the latter is usually omitted in orthography, it is always understood and regarded as the object of the verb. For example, in *A grant joie li ont baisiés,* the past participle *baisiés* agrees with the accusative pronoun *les,* which is understood. If expressed in full, this line would therefore read: A grant joie *les li* ont baisiés. The pronoun *les* is omitted here, however, because, as a rule, an accusative pronoun of the third person was not expressed before a dative pronoun of the same person in Old French. In this connection Paris and Langlois say:[22] "Devant le pronom personnel de la 3ᵉ personne au datif, jamais le pronom de la même personne à l'accusatif n'est exprimé:

---

[18] For other groups of four consecutive lines riming together, compare 372-5; 721-4; 733-6; 1087-90; 1093-6; 1113-16; 1185-8; 1283-6; 1391-4; 1531-4; 1673-6; 1869-72; 1887-90; 1903-6; 1953-6; 2561-4; 2803-6. For another Anglo-Norman characteristic of our poem, compare pp. 193-4.

[19] Compare also 503-8; 917-22.

[20] See *L'Escoufle, Roman d'Adventure (Société des Anciens textes),* p. lii.

[21] Compare also *Fragments d'une vie de Saint Thomas de Cantorbery,* pub. par Paul Meyer, pp. xxxv-xxxvi: Nos fragments présentent plusieurs exemples d'une autre irrégularité qui du reste n'est pas sans exemple dans l'ancienne poésie française et qui est devenue assez fréquente dans *la poésie anglo-normande:* il donne mainte fois la même rime à quatre vers consécutifs et même à six; voy. I, 37-4, 41-4; III, 13-8, 41-4, 95-8, 103-6; IV, 1-4. In a note on the word *française* in the quotation just given the editor says: "Il serait peut être plus exact de dire 'poésie normande', car c'est surtout chez Wace que cette particularité s'observe."

> Li rois ses pere (la) li vout le jor doner (*Cour.* 48).
> Dessoz la bocle (le) li fist fraindre et percier (*Raoul* 134).
> Quant je (les) li voi rompre (*Ivain* 60).
> Il n'ot pas loisir de luy reprendre (*Frois.* 245).

Conf. *Cour.* 113, 132, 155; *Ivain* 255, 256; *Greb.* 62, etc." While the quotation just given states the general rule for the use of two pronouns of the third person in the construction under consideration, the statement should be slightly modified, as will be seen from the following examples where both the accusative and the dative are used:

> Receut l'almosne quant Deus *la li* tramist.
> (*La vie de Saint Alexis,* ed. by Paris and Pannier, 20).
> Ne s'en corocet giens cil saintismes hom,
> Ainz preiet Deu qued il *le lor* pardonist
> Par sa mercit, quer ne sevent que font.
> (*Ibid.*, 54.)

The reason for the omission of the accusative in the construction under discussion lies in the fact that combinations like *le li, la li, les li, le lor,* etc. were objectionable because of the occurrence of *l* at the beginning of two consecutive words.[23]

---

[22] See *Chrestomathie du Moyen Age,* extraits publiés par G. Paris et E. Langlois, Paris, 1897, p. lxvi, 191.

[23] Compare the indefinite *on,* which often takes the article after *et, ou, où, que, si,* but requires that the article be omitted, if the next word begins with *l*. For instance, one says *si l'on voit,* but *si on le voit.*

FRENCH CULTURE AND EARLY MIDDLE ENGLISH FORMS OF ADDRESS

Arthur G. Kennedy

In no respect, perhaps, are the effects of the coming of French culture into medieval England more marked than in the titles used in direct address. In the older literature of the transitional period which extended from the time of the coming of the Normans to about the end of the thirteenth century there is still prevalent that Anglo-Saxon directness and frankness of speech which leaves no such impression of ambiguity as was possible later when one could call his worst enemy ***belamy***. In the religious, and especially in the homiletic literature, the speaker calls his hearer simply ***mon***, or for the plural, ***men***.[1] This use of the vocative when the speaker is attempting to impress some moral truth is occasionally to be found in literature written later in the thirteenth century.[2] In the few other instances where it occurs in the later literature of the period under consideration it seems to imply a slightly critical or perhaps unfavorable attitude on the part of the speaker, thus corresponding to our modern use of it in showing amazed disapproval. Pilate, in Cursor Mundi, uses it in addressing the accused Jesus and Jesus speaks to sinful man.[3]

The unqualified use of the proper name is also common, particularly in Laȝamon's Brut, in the alliterative lives of saints, in Genesis and Exodus, etc., even a king being frequently addressed with no title whatever to soften the seeming bluntness in the use of the name.[4] Here, again, the later use of the name alone seems, in addresses to men of superior rank, such as Pilate or Richard of Cornwall, to show a somewhat contemptuous feeling on the part of the speakers.[5] To a certain extent, of course, this usage must be ascribed to the Biblical origin of the literature in which it occurs. This is especially true of such late thirteenth-century pieces as Cursor Mundi, Song of Joseph and some of the legends. But whether it was influenced much or little by Biblical usage, it is common in the earlier Middle English literature, as is also the use in direct address of the unqualified noun which names the official rank or social standing of the person addressed, as, for example, *king, emperour, reue, keiser, cwen cnihtes,* etc.[6] It is true that a certain amount of deference was shown by the use of these titles, and yet they were not so much complimentary as obligatory, and the deference was compelled by the rank of the one addressed. If a speaker desired to show respect or affection, or contempt or dislike, for anyone, he qualified his vocatives, both proper and common nouns, in such a manner as to leave no doubt as to his feeling. Hence we find in the earlier literature of this period such clear-cut vocatives as *men pe leoueste, gode men, leoue breðren, leofemen, Juliane pe edie, luuewurðe wummon,* or, *pu scheomelese schucke, unseli men, fule ping,* etc. These are especially common in the homiletic and legendary literature of the period.[7]

---

[1] Cf. Lambeth Paternoster (E. E. T. S. 29) 59:99, Ancren Riwle (ed. Morton) 276:13, Old English Miscellany (E. E. T. S. 49) 20:5, Prov. of Hending (Anglia 4:180) version C, 14:10, Surtees Psalter (ed. Stevenson) 36:10, etc.

[2] Cf. Kildare Poems (ed. Heuser in Bonner Beiträge XVII) 1:80, 3:29, 10:48, etc.

[3] Cursor Mundi (E. E. T. S. 57, 59, etc.) 16241, 17144.

[4] Cf. Laȝ. (ed. Madden) 10991, 11424, 18150.

[5] Cursor M. 16033, Poems of Harl. 2253 (ed. Böddeker) Pol. Lieder 1:6, etc.

Of course *louerd* and *drihten* must be named in this connection although they introduce complications too important for adequate treatment in this brief discussion. They are both used as titles of respect in addressing Christ. Moreover the two good old Anglo-Saxon words are waging a war of extermination, one upon the other, during the whole of the two centuries preceding 1300 A. D. In the Homilies of Bodley 343, of the early twelfth century, Christ is usually addressed by his followers as *Drihten,* rarely as *Laford.*[8] In the Lambeth Homilies *Drihten* is used only once or twice, and *Louerd* usually.[9] In Vices and Virtues (ca. 1200), while the older form *hlouerd* occurs even more often than the form without the initial *h,* yet it has apparently entirely driven out *drihten* in direct address. It is true that *drihten* (*drighlin,* etc.) occurs occasionally in later literature of the thirteenth century, and even down to the fifteenth; yet it is no longer common. On the other hand *lord* is used much more frequently as a title of respect. It is, of course, used in all later literature as an appellation of Jesus or God.[10] It is used regularly in addressing kings.[11] Bishops and saints are usually addressed as *lord*, especially in the later legends.[12] Persons of superior rank are so addressed, and sometimes a man will use this vocative in addressing another whom he has formerly regarded as his peer, just because he feels some special need of humiliating himself, as in the case of the Jew who had sinned and had been detected by a Christian.[13] In the later legends the wife of the prince calls her husband *lord* and in a few instances the more modern *mi lord*.[14] It is not uncommon for the poet, in moments of deep emotion, to use *lord* as an interjection, often quite devoid of all vocative force.[15]

---

[6] Cf. Life of Katherine (E. E. T. S. 80) 207, 1572, Life of Juliana (E. E. T. S. 51) 64: 14, Laȝ. 15893, 21095, Gen. & Ex. (E. E. T. S. 7) 2133, Northern Legends (ed. Horstmann in Altengl. Leg. 1882) 1: 434, etc.

[7] Cf. Homilies of Bodl. 343 (E. E. T. S. 137) 1: 434, Poema Morale (ed. Morris and Skeat, Specimens of Early Engl. I) 389, Lambeth Homilies (E. E. T. S. 29-34) 5: 30, 9: 10, Ormulum (ed. Holt) 8652, Jul. 54: 6, Marharete (E. E. T. S. 13) 42b: 16, Gen. & Ex. 2315, etc.

[8] Hom. of Bodl. 343 26: 13, 62: 23, 72: 24, etc.

[9] Lamb. Hom. 7: 16, 43: 18, etc.

The native word *lauedi* (*leuedi, lady*, etc.) has besides its general application to a woman of superior rank also a special use as the form appropriate in addressing the Holy Virgin. Perhaps the latter use reacts upon the more general one, helping to keep for the word the idea of respect and chivalric deference which sets it quite apart from the newer French forms *dame* and *madame*. In the earlier literature of the transition period *lady* is used in addressing the house-wife.[16] The husband of higher rank uses it also in addressing his wife.[17] But as early as the thirteenth century, in literature of Southern England especially, *dame* begins to take its place as the word appropriate to a wife or housewife. The emperor addresses his queen as *dame*, the noble suitor calls his beloved *dame*, and the child uses it in addressing his mother.[18] Laȝamon does not use the word, but soon after his time it appears to have become quite settled in English usage.

After the coming of *dame* the native *lady* is restricted much more in use. The Holy Virgin is always addressed as *lady;* nowhere in English literature before about 1300 A. D. have I been able to find *dame* or *madame* applied to her. This restriction in the use of *lady* is seen most clearly, perhaps, in the Northern and Southern collections of saints' lives of the late thirteenth century.[19] The same feeling of reverence, apparently, induces the poet to use *lady* when a woman saint is addressed.[20] And it is only a step farther to that use of the word in lyrical poems of the late thirteenth century where the lover addresses his beloved as *lady*.[21] Indeed the poems to the Holy Virgin exhibit so many characteristics of the worldly love poems that one would naturally expect to find the same form of address used in both types. And it is natural, therefore, that the form *lady* should come to show special respect when used in addressing a queen or princess.[22] In the Northern Legends it is noticeable, for instance, that the Jews address the queen as *lady*, but Katherine, who has no such spirit of subservience, uses *dame*.[23] As a matter of course the poet addresses his fair hearers or readers as *ladies*.[24] Gradually, in the literature of the thirteenth century one begins to see the development of that narrower, more chivalric conception which is still felt with regard to the word *lady* when it is employed in its best sense. The *lady* is no longer merely the woman of the house, the *hlæfdige*, but she is the Holy Virgin, or she partakes of the attributes of the Virgin, or else she is to be reverenced because of her rank or her many admirable qualities as they appear to a lover or admirer.

---

[10] Cf. Harrowing of Hell (E. E. T. S. C) 147, 235, Surtees Psalter 12:4, 25:2, etc., Southern Legends (E. E. T. S. 87) 25:284, etc.

[11] Cf. Barlaam and Josaphat (ed. Horstmann, Altengl. Leg. 1875) 185, Cursor Mundi 4716, Robt. of Gloucester (ed. Wright) 2736, etc.

[12] Cf. North. Leg. 1:322, South. Leg. 27:1628, 37:100, etc.

[13] South. Leg. 10:535, Havelok (ed. Skeat) 483, 617, Cursor Mundi 5397, etc.

[14] Cf. North. Leg. 17:328, 25:145, South. Leg. 66:502, etc.

[15] Cf. Body and Soul (ed. Stengel) 551, Cursor Mundi 9385, etc.

[16] Cf. Ormulum 8659, King Horn (E. E. T. S. 14) 353, etc.

[17] Cf. Laȝ. 3327.

[18] Cf. Kath. 2080, Ancren Riwle 230:25, 390:7, Floris and Blauncheflur (E. E. T. S. 14) 121, 258, Dame Siriz (ed. Zupitza, Uebungsbuch) 37, 61, 221, etc.

So it may be said that one of the first French words of address to enter the English came not as a luxury but as a necessity to perform part of the function of the native *hlæfdige* which was now restricted and at the same time exalted by the influence of the new foreign culture.

One of the next words, however, to appear in early Middle English, *madame*, occasionally *ma dame*, is more of a luxury, an embellishment, in speech, and has in itself the idea of courtesy, of deference, even in the earliest occurrences noted. In Robert of Gloucester's Chronicle where queens are addressed as *ma dame* and in the Göttingen MS. of Cursor Mundi which along with later MSS. substitutes *madame* for *lauedi* of the Cotton MS. in Joseph's speech to Potiphar's wife, the word is clearly a complimentary title.[25]

In view of this fact and of the fact, previously noted, that *dame* came into the language as a form of address used mainly in intercourse where there was seemingly little reverence shown, the statement in the

---

[19] Cf. Ancren Riwle 38:26, Compassio Mariae (E. E. T. S. 103) 14, 41, North Leg. 23:51, South. Leg. 39:65, 42:111, etc.

[20] Juliana 52:5, Meidan Maregrete (ed. Horstmann, Altengl. Leg. 1882) 193, etc.

[21] Poems of Harl. 2253 Welt. Lieder 2:24, 3:7, etc.

[22] Cf. Gen. & Ex. 2616, Havelok 2797, Cursor Mundi 4340, etc.

[23] North. Leg. 14:212, 34:408.

[24] Cursor Mundi 28010.

[25] Robt. of Glouc. 832, 5858, 6960, 8968, Cursor Mundi 4340.

New English Dictionary that "the early occurrence of Dame in the sense of mother suggests that an A. F. and early M. E. *ma dame* was very commonly used by children to their mother" seems rather questionable. In the English, at least, the early *dame* merely took on the ideas of wife, mother, housekeeper, without any special deference or reverence; whereas *ma dame* carried with it from the first, if we may judge from the few extant examples of its early use, the ideas manifest in the new French culture, manifest also in such polite terms as *sire, belamy, beau sire, beau frere,* etc.

Sire came into use early in the thirteenth century to take the place of the older, more abrupt vocative *mon,* and at the same time to introduce a new element of deference. The nun, in the Ancren Riwle, addresses her supposed critic with *mesire,* the woman uses *sire* in speaking to her confessor, Christ is addressed with *sire.*[26] It is, of course, common in Floris and Blauncheflur, where practically all male characters are addressed as *sire.*[27] It is not uncommon to find it used with the name of the person addressed, as, for example, *Sire Daris, Sire Chauntecler*[28] or with the common noun naming the rank of the one spoken to, as, *Sire Emperoure, Sire Duke, Sire King,* etc.[29] In the lives of saints, both Northern and Southern collections, *sir(e)* is used in all cases where the man addressed is at all above ordinary rank, emperors, princes, judges, bishops, saints, etc. being addressed with the same respectful title.[30] Evidently it is regarded as the title due to men of higher social status, for in the legends even when the saints become contemptuous or openly hostile toward the rulers they continue to *sir* them.[31]

In the later literature of the period under consideration the word is used—often where no rank is deferred to in the person addressed but where there is evident a striving for formality, a rather un-English effort to flatter the one addressed. So the poet addresses his readers, not as *men* or *gode men,* but as *sires,* palmer and porter call each other *sire,* wife addresses husband as *sire,* etc.[32]

---

[26] Cf. Ancren Riwle 52:6, 316:11, 318:13, 406:8, etc.

[27] Fl. & Bl. 38, 173, 577, etc.

[28] Cf. Fl. & Bl. 158, Vox and Wolf (ed. Maetzner, Sprachproben I) 37, Laȝ. 24485, etc.

[29] Cf. North. Leg. 28:137, 34:89, South. Leg. 10:482, 26:83, Horn 838, Havelok 2861, Robt. of Glouc. 4450, etc.

[30] Cf. North. Leg. 14:69, 17:235, 19:71, South. Leg. 6:407, 10:591, etc.

[31] Cf. North. Leg. 34:89, South. Leg. 20:128, 25:15, etc.

[32] Cf. Cursor Mundi 23561, Legend of Eustace (ed. Horstmann, Altengl. Leg. 1882) 376, North. Leg. 16:752, Legend of Marina (ed. Böddeker) 144, etc.

The later common use of the word as the title of a man of knightly rank is seen in a few instances in literature of about the end of the thirteenth century.[33]

On the whole there is, perhaps, no other word among the early French importations that shows as markedly the coming of a new culture into England as does this word *sire*. The old blunt mode of address has almost universally disappeared before the softening influence of this new vocative.

Thus the way is paved for the use of a number of other forms of address which are in their original signification words of respect or affection. While the Ancren Riwle is not given over generally to French forms of address but the writer usually employs such native terms as *leoue suster, leoue men,* etc., yet an occasional use of *belami* shows his familiarity with French culture.[34] So also the occasional appearance of the word in later thirteenth-century literature suggests a familiarity with it in the intercourse of every day life.[35] In a number of instances, where a king, prince or magistrate addresses as *belami* a prisoner or accused person there is a certain element of condescension or hostility which quite belies the seeming friendliness of the word.[36] Moreover one cannot be certain that even a saint uses the word with sincerity toward human foes when he addresses even a devil as *belami.*[37]

Most of the other French titles of respect which can be cited for the thirteenth century are to be found in the South English Legendary which displays so many evidences of strong French influence. Becket is addressed as *beau sire* by the king and St. Christopher receives the same title from a stranger.[38] The king addresses his bishops as *beau seignours,*[39] *beau pere* is addressed to the pope by the bishop of London [39] and *beau frere* is used quite frequently, sometimes in a distinctly friendly sense, as when the pope addresses the Earl of Arundel, or a bishop calls Sir Owayn *beau frere,* sometimes to show merely a good-natured attitude toward a stranger and occasionally to an enemy, even, who is to be propitiated, if possible.[40]

---

[33] Cf. 'Sir Simond ffrysel' in Harl. 2253, Polit. Lieder 6: 154.

[34] Cf. Ancren Riwle 296: 9, 366: 27, and for *belami* 306: 19, 338: 23.

[35] Fl. & Bl. 633, Assumptio Mariae (E. E. T. S. 14) 132, South. Leg. 27: 816, Cursor Mundi 20176, Robt. of Glouc. 8020, Kildare Poems 5: 93, etc.

[36] Cf. South. Leg. 19: 33, 37: 279, 43: 17, 48: 65, 55: 214.

[37] Cf. South. Leg. 15: 354, etc.

[38] South. Leg. 27: 469, 40: 38.

[39] South. Leg. 27: 443.

[40] South. Leg. 27: 1263, 35: 53; 27: 1869, 35: 520, 40: 38, 63: 441; 60: 175, 420, etc.

Related in spirit to this last group of vocatives, but formed of native stock is the title *lording* (*louerding, louerdling,* etc.) which plays quite a prominent part among the forms of address used in the later literature of this period. In this word the new culture seems to have even gone so far as to coin out of old materials of the land a new title of address to perform an entirely new function. For nowhere in the older English usage do I find anything to correspond to *lording* as it is used by the poet in addressing his readers,[41] by kings and men of high rank in speaking to earls, bishops, etc.,[42] or by any speaker, of high or low estate, who desires to show a half-flattering courtesy to common men of no special rank.[43] Laȝamon, who seems not to have had many French words in his vocabulary, uses this complimentary diminutive—thrice, at least, it is changed in the later or B-version to the double diminutive *louerdling*[44]—perhaps because, with all its foreign airs, it still sounds like a native Anglo-Saxon. The author of Cursor Mundi is especially fond of using it in addressing his readers.

One cannot read thru English literature of the thirteenth century without gaining some very definite impressions concerning the new influence which has been at work upon the old culture—or, as the Norman invaders would probably have expressed it, the old lack of culture. The older native vocatives were blunt, intended to attract attention in a thoroly business-like way; the newer ones often carried with them a slight touch of respectfulness or affection. Where, for example, the speaker in olden days said *cyning,* or *Alfred,* the man of later times would probably add a *Sire.* Again, the older vocatives were carefully adapted to the official rank or social standing of the person addressed whereas the newer ones were applied not only to persons who deserved the titles but in many cases were degraded to apply to people in lower degree merely as a matter of compliment, at times, indeed, as a sly form of flattery. So general, indeed, became their application that they lost much of their forcefulness and the use of them often became a mere empty formality. And finally, the older vocative was generally demanded by the very exigencies of the case—if a man was called *drihten* or *hlaford* it was usually because the title was his by right of social standing—

---

[41] Ormulum 918, 11679, Cursor Mundi 6863, 9375, etc.

[42] Cf. Ormulum 6406, Laȝ. 14828, 27394, Fl. & Bl. 647, South. Leg. 27: 549, 795, Robt. of Glouc. 6874, 11564, etc.

[43] Cf. Laȝ. 12664, South. Leg. 27: 1517, 37: 166, Havelok 1401, Cursor Mundi 6216, 8699, 14223, Robt. of Glouc. 4033, 9360, etc.

[44] Laȝ. B. 12664, 13211, 14828.

whereas the bestowal of the newer title was often a voluntary act of courtesy, a giving of good measure in the everyday transactions of life.

If the older usage was more blunt, it was at the same time more honest, more careful of the deserts, socially speaking, of the one addressed, whereas the new culture, while it brought with it a more courteous mode of address, at the same time dealt out these titles of courtesy so promiscuously that as coins of social exchange they deteriorated greatly in value.

THE LIFE OF THEOCRITUS

Augustus Taber Murray

For the reconstruction of the life of Theocritus we have almost no information except such as we can derive from the study of the Idyls themselves. There is to be sure an anonymous *Vita*, a short article in Suidas, and scattered notes in the hypotheses and scholia to the various Idyls; but from these we learn little, and that little is in most instances plainly based, not upon independent knowledge, but upon inferences, sometimes patently incorrect, from the language of the poet himself.

That Theocritus was a Sicilian, a native of Syracuse, may be said to be a' fact now universally accepted. It is stated in the *Vita* and in Suidas (though the latter adds οἱ δέ φασι Κῷον); it is a necessary inference from the poet's own words (see *e. g.* Idyl XI, 7, ὁ Κύκλωψ, ὁ παρ' ἁμῖν, and Idyl XXVIII, 16, ἀμμετέρας ἀπὺ χθόνος, mention of Syracuse immediately following); and moreover the poetry of Theocritus is in its essence thoroughly Sicilian. This last fact does not of itself necessarily prove Sicilian birth for the poet, for it is at least conceivable that he may have come to Sicily (from Cos, *e. g.*) sufficiently early in life to have his genius not only influenced, but in a large measure shaped by Sicilian surroundings. At the same time the character of the poetry of Theocritus is best explained on the assumption that he was native to these Sicilian influences, and that he grew up in the midst of them. Moreover there is no real evidence leading us to think of any other place than Sicily as the poet's birthplace. That he spent much time in Cos later in life, and that he wrote many of his poems there, is incontestable; but save for the doubtful statement in Suidas, there is nothing to lead us to think he was a Coan by birth.

This view, has, however, been held; and elaborate theories have been built up, based largely on a scholium on Idyl VII, 21, which thus explains the name Simichidas—the pseudonym under which Theocritus himself is introduced into Idyl VII: Σιμιχίδα· οἱ μὲν αὐτόν φασι Θεόκριτον· καθὸ Σιμιχίδου (Σιμίχου ?) ἦν υἱός, ἢ καθὸ σιμὸς ἦν. οἱ δὲ ἕτερόν τινα τῶν σὺν αὐτῷ καὶ οὐ Θεόκριτον . . . φασὶ δὲ τὸν τοιοῦτον ἀπὸ πατρίου κληθῆναι, ἀπὸ Σιμιχίδου τοῦ Περικλέους τῶν Ὀρχομενίων, οἵτινες πολιτείας παρὰ Κώοις τετυχήκασιν. The allusion to Orchomenus in Idyl XVI, 104 f., although plainly a reminiscence of Pindar, has been brought into connection with this.

The scholium is corrupt, and has been variously emended according to the sense desired by the individual critic; and although we may grant that there may have been among the Orchomenian exiles, who found shelter in Cos after the destruction of their city by Thebes in 364, a certain Simichidas (or Simichus), son of Pericles, this offers but a slender basis upon which to build up a theory regarding Theocritus' birth and connections. Some may be willing to go even further, and (since the name of Theocritus' father, Praxagoras, is attested for Cos) assume that the poet's family was of Coan stock; but there remains as the most probable explanation of the scholium the assumption that the scholiast knew as little as we about the reasons why the name Simichidas was given to Theocritus, and is but groping in the dark in making these statements; and moreover this assumed Orchomenian connection may after all concern the ἑτερόν τινα and not Theocritus at all. (On this baffling subject reference may be made to Hauler, *De Theocriti Vita et Carminibus*, 6 f.; Susemihl, *Geschichte der Griechischen Litteratur in der Alexandrinerzeit*, I 198 A. 6, and *Jahrbücher* 1896, 391; v. Wilamowitz, *Aratos von Kos*, 193 n. 3; Legrand, *Étude*, 47 ff.; and Cholmeley, Introd. 8 f.).

As to the course of the poet's life we have certain tangible facts deducible with more or less certainty from the poems themselves; but the sequence of these facts and their relations to one another are matters of debate; and the dating of the poems from which they are deduced is often problematic in the extreme. As such facts may be mentioned the following:

(1) Theocritus sought to win the favor of Hiero II, tyrant of Syracuse, and to find in him a patron (Idyl XVI). This was apparently in 275-4, a date now all but universally accepted.

(2) He addressed a similar appeal to Ptolemy II (Idyl XVII). The precise date of this has been a matter of much debate, but Idyl XVII is now generally accepted as being later than Idyl XVI. In any case it antedates 271-0, the date of the death of Arsinoe II. This poem presupposes a stay in Alexandria on the part of Theocritus, as do also Idyl XV and the *Berenice*. The friendship existing between the poet and Callimachus points to the same conclusion.

(3) Theocritus visited Cos, more than once, it would appear, and must be assumed to have spent much time there (Idyl VII). Several of the other Idyls are believed to have been written in Cos (*e. g.* I, II, III,

VI and others), the quality of the evidence differing in the case of the different Idyls. Idyl VII further proves Theocritus to have been a member of a literary circle, though the identification of the individuals mentioned (under pseudonyms) in the Idyl is most uncertain.

(4) That Theocritus studied under Philitas,[1] the poet-scholar of Cos, is an assumption based upon Idyl VII, and widely accepted in modern times, and plays an important part in modern attempts to reconstruct the life of Theocritus.

(5) Theocritus counted among his friends Nicias, a physician of Miletus, and visited him at his home (Idyl XXVIII). Idyls XI and XIII and Epigram VIII are also addressed to Nicias.

(6) Another of the friends of Theocritus must be noted, the Aratus of Idyl VII, to whom Idyl VI is also addressed. This Aratus, traditionally identified with the astronomer-poet of Soli, the author of the *Phaenomena*, is now generally believed to have been a Coan, otherwise unknown, whose acquaintance Theocritus had made when visiting Cos. If, however, as the present writer fully believes, the old identification was well grounded, then in reconstructing the course of the life of Theocritus his friendship with Aratus of Soli must be taken into consideration. I have elsewhere given my reasons for holding that the years between 274 and 271 cover the period at which this friendship may most probably have been contracted.[2]

(7) Theocritus appears to have received commissions to write dedicatory epigrams for statues of Anacreon, Archilochus Pisander, and Epicharmus. This fact may reasonably lead us to the conclusion that he visited Teos, Rhodes, etc.

(8) From Idyl XXX, 13, it is evident that Theocritus' literary activity lasted until his hair was flecked with grey. We can with at least a fair approximation to truth fix the date of his birth; as to the date of his death we have no real evidence.

(9) From the poems we may derive certain secondary inferences:

---

[1] This spelling of the name (instead of the traditional Philetas) is advocated by Crönert in *Hermes*, 1902, 42, and has been widely accepted.

[2] See the present writer's articles, *The Bucolic Poems of Theocritus* (*Transactions of the American Philological Association*, 1907, 125 ff.), and *Aratus and Theocritus* (*Matzke Memorial Volume*, 139 ff.). It should in justice be said, however, that my defense of the traditional identification of the Aratus of Theocritus with the poet of Soli has met with no acceptance by the scholars who have reviewed the latter of the two above-mentioned papers. See, in particular, Rannow in the *Berliner Philologische Wochenschrift*, 1913, 35-41; Sitzler in the *Wochenschrift für Classiche Philologie*, 1912, 1048-1051; Taccone, *Gli Idilli di Teocrito*, 88 n. 1.

that Theocritus took the side of Callimachus in his famous controversy with Apollonius; that in writing Idyl VII he was influenced by Callimachus' *Hymn to Zeus;* that he himself strongly influenced Herodas, etc.

We may take up first the view—it can hardly be called a tradition—that Theocritus in early life studied at Cos under Philitas. The time is generally assumed to have been 292 *circa;* and it was formerly held that a group of poets gathered in Cos (including, besides Philitas and Asclepiades, Dosiadas, Leonidas of Tarentum (?), Alexander of Aetolia, Nicias, Aratus (?), and Theocritus, and very possibly others), forming a sort of bucolic brotherhood, masquerading in pastoral garb, and calling one another by nicknames (Theocritus *e. g.* was Simichidas). This view was until recently very widely accepted, and based upon it there grew up a pernicious system of interpreting the bucolic poems of Theocritus as reflections of this artificial phase of the poet's life, the figures of the pastoral poems being in the most, or even in all, cases regarded merely as disguised poets, and the poems themselves anything rather than transcripts from a life which could lay claim to reality. The theory that there ever was such a bucolic school has now very generally been given up; but the belief that Theocritus visited the east in the period of his youth or early manhood is still very generally retained.

It is enough here to note that the statements in the *Vita,* in Choeroboscus, and in the scholia regarding this assumed period of study under Philitas and Asclepiades are plainly nothing more than inferences based upon the way in which those poets are mentioned in Idyl VII (*Vita* ὧν μνημονεύει; schol. δοκεῖ ἀκουστὴς γεγονέναι), and that no evidence can be advanced from any source to prove that it existed except in the fertile imaginations of the scholars, old and new. As for Idyl VII, it may be stated that it is the only one in which we have any tangible evidence for the existence of this purely artificial sort of pastoral,—a sort of poetry *i. e.* in which the pastoral setting is used without any attempt to re-create a really pastoral world, and in which we have a "bucolic masquerade," and not a reflection of real life. Moreover Idyl VII is relatively late, and we naturally derive from it the impression that the poet, after making a name by his real pastorals, allowed himself this playful treatment of his literary friendships. In other words, Idyl VII is not typical of the Theocritean pastoral, and it of itself presupposes on the part of the poet's literary circle an acquaintance with genuine pastoral verse,—an acquaintance which we may unhesitatingly hold to have been due to Theocritus' own bucolic pieces.

(On this whole question reference may be made to the writer's paper on *The Bucolic Poems of Theocritus*, in the *Transactions of the American Philological Association*, 1907, 125 ff.)

We come back now to our original starting point: Theocritus, born in Syracuse (the question as to the approximate date will be touched upon later), addressed a poem to Hiero in 275-4 in the hope of finding a patron in the Syracusan prince. In this he failed; and in the years immediately following we find him in Egypt, seeking to win the favor of Ptolemy.

These dates, 275-4 for Idyl XVI, and 271 *circa* for Idyl XVII, are virtually the only ones bearing on the poet's life that can be said to be established; and even these have been disputed. Some scholars (Gercke *e. g.*) have sought to place Idyl XVII earlier than Idyl XVI; but such attempts have been futile.

Now what does Idyl XVI reveal to us regarding the poet's development? Is he a beginner, or has he already become master of his art? Is he unknown, or is his fame already established? More important still, what is the bent of his genius?

To these questions varying answers have been given, and the more prudent course is to content oneself with deductions which seem plainly warrantable, and not to seek to prove too much. Idyl XVI is the earliest datable poem in the Theocritean collection; what impression does it make on an unbiased reader?

First we may say that the fame of the author is certainly not established. He writes with modesty and self-distrust, and as regards the world of letters it may be said that the poem reads like the work of a novice; but this does not prove that as regards the work of poetic composition the poet is a beginner. On the contrary the poem shows a warmth of poetic feeling, and a power of expression, which produce a strong impression that in these matters the poet has already served his apprenticeship. Again Idyl XVI is thoroughly steeped in reminiscences of Pindar and Simonides and Bacchylides. The poet is a man of culture and reading. He is not, however, representative of the learned manner of the Alexandrians, nor is there any trace of the influence of Callimachus *e. g.* The learned allusion in vss. 104 ff. is plainly suggested by Pindar's frequent references to the Charites as the givers of the grace of song.

Another interesting fact must be noted. In this early Idyl, when Theocritus turns to portray the blessings of the peace which Hiero is to establish by driving the Carthaginians from Sicily, his most characteristic vein of poetry reveals itself:

ἀγροὺς δ' ἐργάζοιντο τεθαλότας· αἱ δ' ἀνάριθμοι
μήλων χιλιάδες βοτάνᾳ διαπιανθεῖσαι
ἀμ πεδίον βληχῷντο, βόες δ' ἀγεληδὸν ἐς αὖλιν
ἐρχόμεναι σκνιφαῖον ἐπισπεύδοιεν ὁδίταν·
νειοὶ δ' ἐκπονέοιντο ποτὶ σπόρον, ἀνίκα τέττιξ
ποιμένας ἐνδίους πεφυλαγμένος ὑψόθι δένδρων
ἀχεῖ ἐν ἀκρεμόνεσσιν· ἀράχνια δ' εἰς ὅπλ' ἀράχναι
λεπτὰ διαστήσαιντο, βοᾶς δ' ἔτι μηδ' ὄνομ' εἴη.
—(XVI 90 ff.)

Surely this is significant. Theocritus, a born Sicilian, not only shows in indubitably authentic poems an acquaintance with and a sympathetic love for the region of Sicily and southern Italy, but in this, his earliest datable poem, we find this love expressed in terms of pastoral life—precisely as in later poems, which are not at all bucolic in theme, we find the same tendency. This is marked in the *Hylas e. g.* (Idyl XIII); see in particular vss. 10 ff., 25 f., 34 f., 39 ff., and compare Idyl XXV, if that be Theocritean. May we not say with practical certainty that we have in this a proof that the surroundings amid which the poet's genius took shape were Sicilian? Surely, if this is so, his first poetic attempts would most naturally seek to interpret this life with its frank realism, but also with its background of beautiful nature and beautiful legend.

Whether or not we have in Theocritus' bucolic pieces any work actually composed in this early Sicilian period we cannot say. Reflections of the impressions received during these years we certanly have, even though it be true that the bucolic poems one and all belong to a distinctly later date. For these poems are not, what many scholars would make them, thoroughly artificial compositions in which the life, the loves, and the songs of real herdsmen play no part; but pictures essentially true to life, and above all suggested by life,—a life which the poet knew and the charm of which he felt.

This fact I must hold to be completely established, and upon it the interpretation of the Theocritean pastorals should be based, even if we find ourselves forced to admit something of learned allusiveness and of artificiality, or for that matter forced to accept the bucolic masquerade. These things are not the essence of the Theocritean pastorals; they are extraneous elements which intruded themselves into his later work, and which may well have given rise to the antique criticism of his work as excellent πλὴν ὀλίγων ἔξωθεν. ([Longinus], *On the Sublime,* 33; see v. Wilamowitz, *Aratos von Kos,* 192 f.) Yet, strange to say, these same extraneous things have been taken as fundamental by many modern interpreters of Theocritus, and the very existence of a genuine pastoral has been denied; as though Theocritus were as unreal and artificial as Pope and Philips and the other pseudo-idyllists of our own literature.

Among the extant poems Idyl XI has seemed the one which may with the greatest likelihood be referred to this early period. The theme chosen is thoroughly Sicilian, and the style has been thought to betray the poet's manner before he had attained to the finished elegance of the later poems (so v. Wilamowitz, *Aratos von Kos,* 183; *Textgeschichte,* 159; and Susemihl, *Jahrbücher,* 1896, 388). Now Idyl XI is addressed to Theocritus' friend, Nicias of Miletus; so that the problem of chronology becomes at once important. If an early poem is addressed to Nicias, must not Theocritus have been in the east during the early years of his life? It is hardly likely that in the years preceding 275 the Milesian would have found occasion to visit Syracuse.

The extant poems which bear upon the relation existing between the two men (Idyls XI, XIII, XXVIII, and Epigram VIII) suggest that they were nearly of the same age; that a warm affection and sympathy existed between them; and that this close association lasted long; so that we may think of Theocritus as having been not once only, but often the guest of Nicias and Theugenis in their Milesian home. (On the relations between Theocritus and Nicias see Hauler, 11 f.; von Wilamowitz, *Textgeschichte,* 159 f.; Susemihl, *Jahrbücher,* 1896, 384 f.; Helm, *Hermes,* 1894, 161 ff.; and *Jahrbücher,* 1897, 389 ff.; Legrand, *Étude,* 49 ff.)

That they were of about the same age is a natural inference from the way in which Theocritus writes to his friend, and the frankness with which that friend's love affairs are treated in Idyl XI; while in Idyl XIII we have a poetic treatment of the ideal passion of Heracles for the youth Hylas as a passion the like of which both poet and reader had known. Idyl XXVIII may well be the latest of the three (although XIII must be put at least as late as the appearance of the *Argonautica* of Apollonius), and was written to accompany the gift of a silver distaff sent (or brought) by the poet as a gift to the wife of his friend. This is often assumed to date from 274 *circa,* and is held to prove that when going to the east at that time Theocritus went at once to Miletus to the house of his friend. For this there is not a shadow of evidence. The poem leads rather to the belief that at the time it was written Theocritus had long known Theugenis as well as Nicias, and that this was not his first visit to their home. Epigram VIII cannot be dated.

It is ordinarily assumed that Theocritus and Nicias became friends during the period of the former's student life in Cos (*i. e. circa* 295). The view that there ever was such a period of study under Philitas has already been touched upon and discarded for lack of evidence. There is really no evidence to show that Theocritus was ever in the east until he turned thither after his repulse by Hiero, unless this friendship with Nicias compels us to assume this; and it will be seen that this is not the case.

We must first ask ourselves how old Theocritus was in 275-4. Scholars have as a rule been inclined to fix the date of his birth at 315 *circa*, on which assumption he would have reached the age of forty at the time of his approach to Hiero; and as it is commonly assumed that his truly productive period falls at least ten or fifteen years later than that, we find ourselves face to face with a very real problem. The Greek men of letters were as a rule not precocious, but it is hard indeed to believe that Theocritus began so late in life. There seems therefore good reason to follow the suggestion of Helm (*Jahrbücher*, 1897, 389 ff.) that the date of Theocritus' birth should be brought down to 305 or possibly even to 300. On this assumption the tone of Idyl XVI finds complete explanation, and the fact that the poet's truly productive period falls some years later need cause no surprise.

We return now to Nicias. The facts of his life are very obscure, and the two statements which have come down to us (that he was συμφοιτητῆς of Erasistratus, and that he was court physician to Seleucus in 294 *circa*,—traditions which can hardly be brought into harmony with one another, and of which scholars accept, now the former, now the latter) may both be without value for the determination of the date of his birth; and there remains no real evidence which prevents our assuming that he was born at approximately the same time as Theocritus. Now, if Theocritus was aged about twenty-five or thirty when he turned eastward in 274, and if he then met Nicias in Cos or elsewhere, all is in accord, and there is no reason whatever to see in this friendship a ground for assuming that Theocritus had at a still earlier period spent considerable time in the eastern world. The only point requiring further consideration is the character of Idyl XI and the supposed early date suggested by this.

This evidence is not conclusive, and not all will attach as much weight to metrical evidence, as establishing the date at which a given poem was written, as v. Wilamowitz does. Susemihl *e. g.* (*Jahrbücher*, 1896, 388), while he accepts the conclusion, denies the validity of the grounds on which it is based; *i. e.* he accepts the early date of Idyl XI without evidence, because this view falls in well with the theory he has formed regarding the course of the life of Theocritus. I am myself inclined to accept the early date of the composition of Idyl XI without regard to theories. The theme (the amorous Cyclops) is thoroughly Sicilian; and to my mind it may be regarded as certain that the young poet in his Sicilian home had written not one, but many such pieces. Idyl XVI, as we have seen, reveals a poet who, while yet unknown, has none the less learned his art: he must already have tried his hand at many a piece of composition. Now, since Idyl XVI shows plainly the "bucolic" bent of his genius, and since the pastoral element in real life must have met his eyes constantly in Sicily and southern Italy, we must hold that it is wholly probable that these early compositions would be largely in a bucolic vein. When the poet left Sicily for the larger world he may have carried with him many such early pieces; and if we are right in assuming that he at this time met Nicias and became warmly attached to him, what unlikelihood is there in the assumption that he took one of these early poems and addressed it to his friend, adapting it to his end by prefixing a few dedicatory lines, in which he alludes playfully to his friend's profession (Nicias was, as has been stated, a doctor), and by adding a couple of lines at the end? This of course does not admit of proof; but it seems a wholly natural assumption.

I maintain therefore that the style of Idyl XI, taken in connection with the fact that it was dedicated to Nicias, by no means compels the conclusion that Theocritus had been in the east before he went thither after his repulse by Hiero. Neither do the literary friendships revealed by Idyl VII compel it; and, as has been stated above, the view that Theocritus was a student in Cos during the lifetime of Philitas has now been very generally abandoned for lack of evidence. We hold, therefore, to the view outlined above; and find in the influences surrounding Theocritus during his early life in his Sicilian home the explanation of the character of his poetry, even though that poetry was for the most part written later in life and in the eastern world.

Theocritus then turned eastward for the first time in 274 or thereabouts, a man rather under than over thirty, and one who had as yet won no fame as a man of letters. He may well have been attracted to Cos by the fame of the island as a literary centre, and may have remained there two or three years. There he presumably met Nicias, and contracted with him the friendship which lasted so long. There he met also, in all probability, Aratus of Soli, who may be assumed to have visited Cos on his way from Macedonia to Syria, whither he appears to have gone after the literary circle, which had gathered around Antigonus Gonatas at Pella, was broken up by the return of Pyrrhus from Italy in 274. Here in Cos, Theocritus must be assumed to have entered upon a life of literary activity and of association with men of letters, with some at least of whom he contracted the friendships betrayed for us by Idyl VII; for under the pseudonyms occuring in that poem we may well believe that there lie hidden the names of men famous in that day in the world of letters. The problem of penetrating these disguises, while naturally a fascinating one, is, however, baffling in the extreme, and certainty is not to be attained.

From Cos, sometime before 271-0 Theocritus went to Alexandria, the brilliant capital of the Ptolemies. Here he must have made a somewhat prolonged stay. He first addressed to Ptolemy an elaborate eulogy (Idyl XVII) whereby he evidently sought to win the royal favor,—and, it would appear, not without success. Here also he must have written the brilliant *Adoniazusae* (Idyl XV), which gives a vivid picture of life in the great capital, and which is in a sense a companion piece to Idyl XVII, giving to the queen, Arsinoe, in her turn her due meed of praise. Further, during this stay in Alexandria Theocritus became the frend of Callimachus. Indeed even Idyl XVII seems to show clear traces of the latter poet's influence, and to have been modeled upon his *Hymn to Zeus*. This friendship must have been a lasting one, for Idyls VII and XIII, both distinctly later in date than Idyl XVII, show Theocritus a staunch adherent of Callimachus in his controversy with Apollonius.

After this somewhat protracted stay in Egypt, Theocritus must be assumed to have returned to Cos. Whether or not he had for any reason lost the favor of the king (as is assumed by Gercke) cannot be stated. It may well be that he was merely weary of the artificial life in the great capital; but in any case the evidence that the poems afford leads us once more to Cos. To this period we must refer the composition of Idyl XIV, which as v. Wilamowitz has acutely pointed out, must be put after a visit to Egypt, the characterization of Ptolemy contained in vss. 55 ff. seems so clearly based upon personal knowledge. The passage also leaves with one a strong impression that Theocritus' relations with Ptolemy had been such as to preclude Gercke's assumption of a break between the two.

Here in Cos falls the truly productive period of the poet's life. He had served his apprenticeship in the earlier period in Sicily, quick, we may believe, to respond to the beautiful scenes around him; he had since then passed through the hard school of disappointment, and had later had his horizon broadened by travel and by association with men of letters and men of the world. Sure now of himself and of his art, he writes in his own peculiar vein, with a vivid sympathy with the pastoral life which he knew and loved so well; with his native dramatic touch, which vivifies the whole and makes it real; with an inimitable sense for language, and a feeling for the pathos of common things; above all with a sure restraint, and with that clearness of outline which have marked him as the last of the Greeks in the world of letters. From this period and from Cos date probably the majority of the poems upon which his fame rests. The Coan origin of Idyls II and VII is indisputable; Idyl I is commonly believed to have been written in Cos, but the evidence is not entirely conclusive. Still the poem plainly belongs to the poet's mature period, and it should be borne in mind that Sicilian coloring does not of itself prove a poem to have been written in Sicily, though it does offer a presumptive ground for thinking that the poet's genius developed under Sicilian influences. Idyl V must be put later than Idyl I, from which it borrows a verse; but it is of interest that, although he is writing in this artificial eastern world, Theocritus lays the scene of the Idyl in southern Italy. Is it possible that this Idyl too is based upon some sketch begun in the early Sicilian period? Idyl III is on doubtful grounds connected with Cos; and Idyl IV, on equally doubtful grounds, is held to be later in date than Idyl III. We may well feel justified in referring these poems to this second Coan period; but it is surely better in the case of these and others regarding which we lack evidence, not to seek to prove too much. Idyl VI is later than the date at which the friendship between Theocritus and Aratus was contracted, and Idyl X is plainly to be associated with Lydia, whence the Lityerses song comes. This points naturally to the eastern world, though it no more proves the poem to have been written in Lydia than the Thyrsis song in Idyl I proves that poem to have been written in Sicily.

The epic Idyls, the genuineness of which may be accepted,—*Hylas, Dioscuri, Heracliscus* (XIII, XXII, XXIV), with XXV, if that be Theocritean—may well all be late. *Hylas* is certainly later than the publication of the *Argonautica* of Apollonius, and so is also Idyl VII in all probability. For although Idyl VII looks back to a happy day spent in Cos on the occasion of the poet's first visit to the island, it was written at a distinctly later date, and brings with it the flavor of that later date.

We cannot trace the course of the poet's life further. His poetic activity lasted until his hair was grey (Idyl XXX), but we have no trustworthy tradition regarding these later years of his life, or regarding the date of his death. The dedicatory epigrams suggest, if they do not prove, that the communities of Teos and Rhodes *e.g.* employed Theocritus to prepare these for statues publicly dedicated. It is of interest to see in the epigram on Epicharmus a slight evidence that the people of his own city gave the poet at least thus much of recognition.

This last fact should not however be advanced as proof that Theocritus again visited Sicily. Such a conclusion is not warranted, nor were conditions in Sicily such as to attract him. Yet despite this, and despite Theocritus' long sojourn in the east,—despite the fact that the pastorals, in their present form at least, date from the period of the poet's mature life, and were written in that learned and artificial eastern world,—it remains true that we owe the poet, and we owe his pastorals, to Sicily. For without that sympathetic first-hand knowledge of nature and of life which the poet himself owed to the fact that his boyhood and early manhood were spent in that fair land, they would not, and could not have been written.

THE DECAY OF GERMAN LITERATURE IN THE THIRTEENTH CENTURY

KARL G. RENDTORFF

THE PERIOD from 1170 to 1230 marks a climax in the development of German culture. It was the era of the great emperors of the Hohenstaufen dynasty, the age of chivalry; it was the time when Germanic epic poetry found its culmination in the Nibelungenlied; when the court epic reached its height in the works of Hartmann von der Aue, Wolfram von Eschenbach, and Gottfried von Strassburg; when the Minnesong flourished and found its loftiest expression in the exquisite songs of Walther von der Vogelweide. In fact, the freshness and strength, the imagination and idealism, the productiveness and perfect technique which characterize the works of this period have caused it to be known as "the first classical period of German literature."

This period came to an abrupt end about the year 1230, and with it the development of German literature received a sudden check. After all this wealth of imagination and vigorous literary activity there followed a period lasting almost three centuries, the characteristic features of which are shallow conventionality and sterility. This stagnation cannot possibly be mistaken for a natural reaction which we sometimes observe after a time of great literary productiveness, a period of hibernation so to speak,—it was too complete for that and of too long duration. It was a total standstill. If we were to represent the development of German literature graphically, the period after 1230 should be indicated not by a downward curve but by an abrupt drop.

This complete break in the continuity of German literary thought and life has, of course, not failed to attract the attention of the scholars. Yet in most cases they have been satisfied with noting the fact; and, considering the importance of the phenomenon, comparatively little has been offered by way of explanation. And what little there is does not seem convincing.

---

[1] After the acceptance of this paper for the Flügel Memorial Volume, which was expected to appear in September, 1915, Dr. Jordan requested its author's permission to reprint the paper in his "War and the Breed." Owing to unforeseen delays in passing the present volume through the press, its appearance here was anticipated by the recent publication of Dr. Jordan's book.

We have, in the main, two theories diametrically opposed to each other. Scherer (*Geschichte der deutschen Litteratur,* p. 231) holds that the natural growth of Middle High-German poetry was thwarted by an external force, the church, at a time when it had not yet exhausted its resources and was capable of development along many lines. "Middle High-German poetry," he argues, "did not decay from within, but was deprived of light and air from without; the old enemy of secular poetry, the German clergy, commenced with redoubled power a new attack which was this time successful and decisive for a long period." This theory meets with an emphatic denial in Bartels' *Geschichte der deutschen Litteratur,* vol. I, p. 56. Bartels believes that chivalrous poetry died from natural causes at a time when it had completely outlived itself; and he attributes this decay to the fact "that the time was not yet ripe for a revival of literature by realism or by an intelligent imitation of the classical models of antiquity."

It should be stated here that both Scherer and Bartels have contented themselves with merely presenting a theory, making no attempt to prove it. And it should also be stated that both of them, at least in this connection, take into consideration the literary development of Germany only, paying no attention to the political and economic conditions of the time.

Modern science has taught us the futility of trying to solve problems while confining ourselves to the narrow limitations of one particular field of work. A solution of this problem can only come from a study of its connection with the development of German civilization as a whole. We cannot separate the literary life of a people from its religious, political, and economic life; we are unable to interpret the literature of a people unless we know the physical, intellectual, and spiritual conditions which produced it.

What then was the social and intellectual background for the poetry of this period?

German literature of the so-called "first classical period" cannot be called the genuine expression of the soul-life of the German people, for it was confined almost exclusively to one class of the people: it was written by and for the small body of knights, *der Ritterstand.* It was a *Standespoesie,*—the literary expression of the sentiments of one exclusive class, knighthood,—the product of a culture in which only a comparatively small group of the nation participated.

The predominating position held by the knights in the literary life of the thirteenth century is a startling phenomenon. There is something incongruous about the fact that the exponents of the warlike life of the nation should be the only ones to voice the poetic and literary sentiments of the people. This fact can be accounted for only when we realize that the *Ritterstand* of that time really represented the pick and flower of the German nation, not only physically but intellectually as well. For the *Ritterstand* had not yet become the exclusive nobility into which it developed in later times. It still was open to any freeman or even serf who had conspicuously distinguished himself by deeds of physical courage or by his mental powers.

This is not the place for a comprehensive or critical study of the rather obscure origin of knighthood. Yet I wish to point to a few facts regarding the history of knighthood that may help to prove my assertion that it was the pick of the nation. Feudal aristocracy of the middle ages was the natural result of two leading classes of the people growing into one; one of them conspicuous because of its intelligence and administrative ability, the other one distinguished by its energy and physical prowess. The first class consisted of the so-called "ministeriales," a body of retainers about the person of the king, attending to the royal service in high and low positions. Because of their official position and their ability, they soon gained a leading part in the life of the nation. They are the forerunners of what still exist in Germany as *Beamtenaristokratie;* they still play a predominant part in the social and political life of Germany. The second are the *rîter,* mounted troopers who devoted their life to professional warfare; who came into existence as a class about the tenth century, at a time when the old German army, fighting on foot, and consisting of every freeborn German who could bear arms, came to be supplanted by an army of trained soldiers fighting on horseback. These knights were the old freeholders, but after about 1150 their ever decreasing number was supplemented by serfs who had won distinction by their courage. Both of these groups were alike in that they received fiefs in payment of their services; and so, in the course of time, they were welded into one. They formed the *Ritterstand* with its peculiar *Standeskultur* and, as has already been stated, with a *Standespoesie* of their own. They developed their own code of honor, their *Standesehre;* and they were supported by a high-strung self-consciousness and a firm belief in their own value, their *Standesbewusstsein.* And yet they were not altogether cut off from the nation as a whole. Many of them had still recently risen from the masses, and the simple emotions that swayed the man of the common people still appealed to them. Of course, it is not to be assumed that all talent and genius of the nation was confined to this one class; but owing to the social conditions of the time, it was here only that the medieval German man had opportunity for culture and freedom, that he could find expression for his individuality.

A very important fact to be remembered in connection with this is that the knights at that time were the only class of the German people who, separate from and independent of the church, had produced a culture of their own and had, in contrast to the pale asceticism of the church, developed a healthy and natural conception of life based upon the national *German* character. The literary expression of this new vigorous attitude towards life is the poetry of the first classical period. This poetry must, to some extent, be called artificial; it undoubtedly voices the sentiments of a limited class of the people only; yet it is a much truer expression of the German *Volksseele* than we find in the literature of the preceding centuries.

For ever since Germany had been christianized, its literature had been in the hands of the clergy, and had only served the needs of the church. The duty assigned to art in all its phases was simply to present, within narrow limitations, by means of stereotyped forms, the teachings of the church. This appears not only in the literature of that time but also in all art. The imagination was fettered to subjects that had been represented so often that it was impossible for the individual artist to exercise originality. Feeling was stifled under the weight of mere repetition, and the *Volksseele* of the German people found no expression in art. But at this moment the *Ritterstand* suddenly came forward and wrested the art of poetry from the hands of the clergy. The imagination which had been suppressed and distorted so long, seized upon and assimilated all the material which knighthood had gathered in foreign lands, in Italy and even in the Orient, and where else the fate of war or the crusades had taken them. It quickly mastered and even improved upon the technique of its French models. And the result is that burst of glorious art called "the first classical period of German literature."

And now to return to our original question: Why did all this glory vanish so suddenly and so completely? Shall we believe that the pressure of the church annihilated it, or is it true that it had outlived itself and died of old age?

While having this problem in mind I chanced to read Seeck's *Geschichte des Untergangs der antiken Welt* (vol. 1, 270 ff.), and I was struck with the parallelism between the intellectual conditions existing in Greece and Rome at the time of their decay and those found in Germany toward the end of the Hohenstaufen dynasty, a period marked in Germany by the rapid decline of its political supremacy and, in literature, by the abrupt end of the first classical period.

I was interested to note that Seeck views the matter not only from the standpoint of the historian but also from that of the biologist, and in this way reaches conclusions differing very widely from those generally accepted. Seeck believes that intellectual and moral qualities are transmitted by men to their descendants. He attributes the downfall of the ancient world not to any physical degeneration of the people but to the intellectual stagnation which was due to what he calls *die Ausrottung der Besten.* This systematic "extermination of the best" was caused in Greece as well as in Rome by the endless internal conflicts within the nation, in which the nation's best blood was drained and people of less strength of body and mind lived to propagate the race. So the Greeks, whose creative genius has furnished inspiration for all times to come, rapidly deteriorated. Their originality of thought disappeared, and with it their politcal prestige. In Rome the intellectual decadence is less striking, for the Romans had never reached the exalted position of their more conspicuously gifted neighbors. Here the decadence became more plainly discernible in the political downfall of the nation. The Romans became a nation of cowards, and the dacadence set in just at the time when the wholesale slaughter of men for political reasons had begun. The lack of courage, so evident in the national life, is also manifest in the decay of the intellectual life of that period. For does it not take courage to produce a new thought? is not every great deed in the field of art and science as much a proof of character as of talent? But of courage there is no evidence. There is stagnation everywhere. We find the poet and the artist content with copying the old models, or bent on outdoing the old masters by means of technical skill, striking motives, or rich adornments. No one dared to enter upon new fields.

From Seeck's study of the downfall of the ancient world the following deductions may be drawn:[1] whenever in the course of internal wars or revolutions the strong men of a people are systematically exterminated, even for a relatively short period, and the propagation of that race is thus left to the mediocre and the weak, the inevitable result will be the degeneration of that people. For the propagation of a race is governed by the same inexorable laws of heredity as are those which govern the propagation of the individual. And this degeneration is bound to result not only in the political downfall of that people but will show itself in its decadence in the realm of culture. A people hitherto strong and creative will quickly become a race of epigones, weak and decadent, without productiveness and intellectual strength, at best able to imitate the thoughts of their stronger forefathers.

---

[1] I do not agree with Seeck's theory concerning the effect of *war* upon a people. He believes that while a systematic extinction of exceptional people such as was carried out in Greece and Rome (and, as I shall attempt to prove on the following pages, in Germany during the middle ages) must produce a race of cowardly and mediocre men; a terrible war that sweeps over a nation may have a beneficial rather than a detrimental effect upon the physical and intellectual life of that nation. His theory is that in such a war a larger proportion of the weak are killed than of the strong, and consequently, while the number of people is greatly reduced, the average physical and intellectual strength of the nation is greater after the war than before it. Seeck cites a number of examples to prove his theory, and claims that usually a century or so after a destructive war the nation bears its finest intellectual fruit.

The parallelism between the ancient world and Germany during the thirteenth century is easily drawn. In Greece and Rome, as in Germany, we find culture confined to a limited class of society. What we would call "the people" did not yet contribute to this culture, nor were they directly benefited by it. In Germany this limited class of the nation was represented by knighthood, or, to be more exact, by the knights of a relatively small section of the country, for the literary and, to a large extent, the political activity of Germany was then concentrated upon Swabia, Bavaria, and Austria, while the North and the North-east remained much less active.

During the latter part of the twelfth and during the first half of the thirteenth century knighthood in these southern parts of Germany became decimated, owing to the continuous bloody wars in which Germany was engaged. I need not give here a complete review of the political history of that time, inasmuch as the historical documents fail to give an answer to the question that would interest us most, namely, the question as to the loss of life in the ranks of the knights. No one has so far computed this loss; at least I know of no such attempt, and the histories that I have consulted seem to take no interest in this question. And yet this loss of human life must have been appalling. And the knights who bore the brunt of the battles suffered the greatest loss.

Let me instance only those bloody wars which, owing to their fatal ultramontane policy, the Hohenstaufen dynasty waged in Italy. Again and again powerful German armies crossed the Alps in order to crush the flourishing cities of northern Italy, especially Milan. Sieges of long duration, bloody battles, constant guerrilla warfare, a climate hostile to the northern warriors, famine and epidemics, as well as poison and the dagger of the Italians, did their work, and of those glorious armies only small remnants returned to Germany.

Again, religious enthusiasm and the spirit of adventure induced the best and most energetic among the German knights to follow the summons of the cross. Thousands of them perished or were slain on the perilous marches through the deserts of Asia Minor, many were carried off by epidemics in the overcrowded Italian ports before they even could embark, while whole armies were killed on the fields of Palestine.

Very great was the loss of life in Germany during the constant wars between the Guelfs and the Ghibellines,—wars so bitter that brother would rise up against brother, and no mercy was shown. Many knights also fell in the incessant border wars carried on against the Slavs in the attempt to regain the country east of the Elbe and to colonize it.

Another factor largely contributing towards extinguishing the best blood of knighthood was that the service of the church appealed to the best and keenest minds of that time. For the higher positions in the church implied not only the possibility of doing much good, but they meant honor and opportunity, as the whole diplomatic service and most of the influential government positions lay in the hands of the higher clergy. And, of course, the men holding such church positions were forced to live in celibacy. A large number of knights joined one or the other of the semi-religious orders of knighthood beginning to flourish at the time of the crusades, and they too were forced to live in celibacy. Asceticism and the spirit of renunciation drove many knights into the monasteries.

These factors combined, all of them working with a tremendous destructive force, decimated in the twelfth and thirteenth centuries the ranks of the German knights. But knighthood did not lose only in numbers, it lost in quality and in character. Its best blood disappeared and "only the weaklings remained to propagate the race." This was so much the more serious because the more stable an institution chivalry had become the more exclusive it grew. Its ranks were not replenished and no new blood was infused.

My conclusion then is simply this: Just as in the ancient world, so in Germany towards the end of the middle ages, the best died out, and, owing to the social and economic conditions existing in Germany during the twelfth and thirteenth centuries, "the best" were the knights. And with them died their peculiar culture, chivalry, as well as their poetry, a flower that could grow on no other soil. I do not deny that other causes, mostly of economic nature, contributed towards the decline of knighthood; but the main factor, I hold, was the physical degeneration brought about by the incessant wars of that period. The natural and inevitable consequence of this physical decay was the mental decay of knighthood; and a glaring symptom of this mental decay is the decline of German poetry in the thirteenth century.

There is a point of contrast, however, between the ancient peoples and the Germans of the thirteenth century. The gap between the intellectually strong class and the mass of the people was much wider in Greece and Rome at the time of their decline than in medieval Germany. As a consequence, with the extinction of the best intellects in Greece and Rome the nation as such suffered a much greater loss than Germany did through the loss of its knighthood. In Greece and Rome it caused a lowering of the intellectual level of the nation as a whole which, according to Seeck's theory, resulted in its political downfall; in Germany it meant only the extinction of one class, and with it a complete stagnation of the literary life of the nation, while intellectual pursuits in other lines not cultivated by the knights were not affected.

Slowly a new class, the *Bürgerstand,* arose to take the place of the *Ritterstand;* and with the growth of this new class the trades and callings which they had been following gradually developed into the dignity of arts. Thus architecture, which so far had been but a trade, assumed a predominant role; Gothic architecture began to flourish, and with architecture there came the art of the sculptor and the painter. Gradually the burgher appropriated the field once preempted by the knight, and a new literature, which was in fact the obscure beginning of modern German literature, arose. As I have stated before, this new literature was at first marked by the tendency to imitate the older models in form and in contents. The new poets seemed to have but the one desire, to acquire a mastery of the form and technique bequeathed to them; and so bent were they upon this labor that it left them no energy to find a new and original note. When the burghers attempted a literary expression of their own life, they did not rise above the commonplace; and it is pitiful to see how, when they feel the lack of imagination and originality, they borrow expressions and figures from their models,—expressions which once had a concrete meaning and value for chivalry, but which could mean nothing to the poets of a period that had outgrown chivalry. They had not yet been able to find new poetic values adapted to their own way of thinking. Poetic imagination had doubtless been concentrated in knighthood, and when knighthood died German literature came to an abrupt and total standstill.

PUNS IN CHAUCER

JOHN S. P. TATLOCK

THE PUN, word-play, paronomasia in medieval literature may be traced to various impulses or lines of tradition. There is the pun on the name, like the words of the disguised King Horn to Rimenhild, as he passes her the wine-draught,

'Drinke to Horn of horne';

a primitive universal sort of quip, which carries us back to the symbolism for men and tribes expressed in heraldry[1] and totemism, and the plays on names in the Old and New Testaments. The evil suggestion in a name may be used to point satire, as in the first English petition to Parliament,[2] 1386, which attacks Nicholas Brembre, of ill repute in London politics, whose name is a by-form of our word bramble:

> Sithen thise wronges bifore saide han ben vsed as accidental or comune braunches outward it sheweth wel the rote of hem is a ragged subiect or stok inward, that is the forsaid Brere or Brembre.

Puns for adornment, emphasis or satire grew partly from the following of post-classical and ecclesiastical Latin style; they had been more or less used by earlier ancient writers, but developed in the so-called "African" style, and with the affectation or curiosity, the artifice and unction, of some of the church fathers, their contemporaries and followers.[3] Nothing could be better than the brilliant stroke at episcopal avarice in the *Speculum Stultorum*[4] of Nigel Wireker, precentor at Canterbury in the twelfth century:

Præsul amat marcam plus quam distinguere Marcum,
Plus et amat lucrum quam facit ipse Lucam.

---

[1] As, *e. g.*, in Shakespeare's escutcheon, or that of the city of Oxford (an ox wading through water). Sir Reginald Oakes will have oak-leaves and acorns on his shield, and Sir John Nutting nut-branches. The American equivalent is the bookplate.

[2] Morsbach, *Über d. Ursprung d. neuengl. Schriftspr.* 175-6.

[3] Cf. Norden, *Antike Kunstprosa* (Leipzig, 1898), 409, 600 f., 614, 620, 754.

[4] *Satirical Poets of the Twelfth Century* (Rolls Ser. 1872), I. 106.

Even the simple-minded Latin of the last line cannot spoil it. Again, the pious author of a Middle English life of St. Juliana opined that, when paid to idols, honor rooted in dishonor stood:

> Þa wes . . . maximian þe modi keiser ine rome heinde ant heriende heðene mawmez. wið unmeð muchel hird ⁊ unduhti duheðe.[5]

Puns due to roguish humor or mere mental activity must always have been common among people of agile wits and no great culture. The very clever author of the Middle English *Floris and Blanchefleur*[6] puns on *cyssan* and *cyst* (virtue):

> Nu hi cluppeþ and cusseþ
> And makeþ togadere muchel blisse.
> If þer was aȝt bute custe,
> Swete blauncheflur hit wiste.

Chaucer's French admirer Deschamps puns repeatedly.[7]

In Chaucer the pun is as common, perhaps, as in other poets of humor except during times when Euphuism and the like gave especial vogue to artificial wit. Puns serve him for ridicule and innuendo; usually the word containing the pun occurs only once, and something in the situation inevitably suggests a second meaning. He leaves us guessing whether or not the Wife of Bath had lovers before she married:

> Housbondes at chirche-dore she hadde fyve,
> Withouten other companye in youthe.[8]

---

[5] Ed. Cockayne (E. E. T. S. 1872), p. 4.

[6] Ed. Lumby and McKnight (E. E. T. S. 1866 and 1901), ll. 549-52.

[7] As M. Raynaud his editor points out (Soc. des anc. textes franç., IX. 285, V. 356, IX. 287). He puns on *imperium* and *impejorare* (*Miroir de Mariage*, 8816, and *Balade* MLXIII):

> Et la bonne [*sc.* femme] par leur parler
> Font ilz (*sc.* les menestrelz, etc.) bien en l'empire aler.
> Alez tuit du regne en l'empire;

on *froid* and the abbey of Froidevaux (*M. de M.* 8865):

> Puis qu'il y a seigneur sanz dame,
> L'en treuve hostel de Froitvaulx.

Puns and other word-plays are not uncommon in Old French. Gautier de Coincy puns on *Marie, marier;* Chrétien de Troyes and Thomas on *amer, l'amer, la mer;* the latter on *Tristan, tristour,* etc. Cf. Schinz, *Publ. Mod. Lang. Assoc.* XXII, 514 ff., and Warren, *Mod. Philol.* III. 516-7, 526, who refer to other cases.

[8] *Prol.* 460-1. *Withouten,* generally meaning *without,* means *as well as, besides, except, not to mention,* in *Troilus and Criseyde,* II. 236; *Havelok,* 425 (E. E. T. S.); *Piers Plowman,* B-text, XIV. 237; Laȝamon's *"Brut,"* 26213, 26215. The Wife's prototype in *Le Roman de la Rose* (13369, Marteau's edition) had had "autre compaignie," but perhaps she herself had not (*W. B. P.* 4 ff.).

By substituting finesse for coarse bluntness puns allow much worse innuendo; there is a case near the end of the *Shipman's Tale,* several in the *Reeve's Tale,* and one toward the middle of the *Sumner's* (containing a striking piece of dramatic irony). More decorously, when the Friar with jocular pomposity has been chaffing the Wife of Bath,[9]—

'This is a long preamble of a tale!' (*W.B.P.* 831),

the Sumner ridicules his academic language,

'What spekestow of preambulacioun?
What! amble or trot or pees or go sit doun!' (837-8).

The Friar has his come-back with another pun:

'For thogh this Sumnour wood were as an hare,
To telle his harlotrye I wol nat spare' (*Fri. T.* 1327-8).[10]

Most of the puns in Chaucer are mere pieces of vivacious humor, usually unforeseen, lightly snapped up as they drop. The Clerk has a library of philosophy, but little of the gold which should accrue to the philosopher in the cant sense of alchemist (*Prol.* 297-8),

But al be that he was a philosophre,
Yet hadde he but litel gold in coffre.[11]

In *Troilus and Criseyde* there are a couple of casual jingles (the first being the only play on a name that I have noticed):[12]

---

[9] We should expect a cheery understanding between these two. She is just such a "worthy woman of the town" as he is "well beloved and familiar" with (cf. *Prol.* 215-7, 459). The two were made for eachother, as Mr. Percy MacKaye saw, in his *Canterbury Pilgrims.*

[10] In fourteenth-century English, needless to say, *har-* was pronounced identically in the two words. Unless a pun were intended, *harlotrye,* usually meaning scurrility or profligacy, was hardly the word in the connection, though the Sumner is called a *harlot* (or rascal) in *Prol.* 647. This seems, by the way, the earliest case of "as mad as a (March) hare"; the *Oxford Dictionary* cites nothing earlier than 1529, and Bartlett's *Familiar Quotations* nothing earlier than Skelton's *Replication against Certain Young Scholars* (l. 35, soon after 1518).

[11] Skeat notes this pun and that below from *Sq. T.*: "such puns are not common in Chaucer," he says. He may also be right in seeing one in *Cook's T.* 4402; see *Munimenta Gildhallæ London* (Rolls Ser. 1860-2), III, 180-2.

[12] I ignore the interpretations of St. Cecilia's name (*Sec. N. Prol.,* 85-119), where the word-play of Brother Jacobus' Latin is lost in Chaucer's translation.

So whan this Calkas knew by calculinge,
And eek by answere of this Appollo (I. 71-2);

O god of love in sooth we serven bothe.
And, for the love of god, my lady free,
—(says Diomed to Criseyde, v. 143-4).

As the Cook claws the Reeve on his back in tipsy joy over his tale, he cries,

'This miller hadde a sharp conclusioun
Upon his argument of herbergage' (*Cook's Prol.* 4328-9),

semi-scientific language,—'a sharp experiment on the subject of giving lodgings,'—a 'tough proposition,' in our similar vernacular; but he is thinking also of the cruel ending of the experience. The Squire disclaims rhetorical skill in quoting the ambassador from the king of Araby and Ind,—

Al-be-it that I can nat soune his style,
Ne can nat climben over so heigh a style
(*Sq. T.* 105-6).[13]

The Canon's Yeoman has lost the bright eyes of youth poring over smoky fires and stinking retorts among the alchemists, but his rueful joke refers as much to having been bamboozled out of his own and other people's money,—

And of my swink yet blered is myn yë (l. 730).[14]

The most elaborate punning is in the *Complaint to his Empty Purse*:

---

[13] More distinctly a pun than most other identical or punning rhymes, not uncommon in Chaucer and medieval poetry generally, cultivated by one school of modern French poets, but prohibited in modern English poetry, except the definitely comic. Though in Chaucer an identical rhyme is supposed to be used in different senses or at least as a different part of speech, or (if a suffix) is attached to a different word, there are numerous cases in the *Man of Law's Tale* of complete identity in sense as well as sound. These are,—to telle, I telle (408, 411); that . . . woot, god woot (436, 439); in this wyse, in no wyse (793, 796); I tolde, he him tolde (877, 880); dryving ay, blessed be she ay (947, 950). The matter is not noticed by ten Brink (*Chaucers Sprache u. Verskunst*, § 330), whose treatment of the subject of rhyme is very incomplete. Chaucer, who was far from following Longfellow's exhortation to work as well both when unseen and when seen, simply put the dubious rhymes as far apart as possible, shunning instead of courting notice, as in the *Sq. T.* passage. Such rhymes occur elsewhere also.

[14] The last phrase of course means *fooled* (cf. *Reeve's Prol.* 3865, Reeve's T. 4049, *Manc. T.* 252).

To you, my purse, and to non other wight
Compleyne I, for ye be my lady dere!
I am so sory now that ye be light;
For certes, but ye make me hevy chere,
Me were as leef be leyd upon my bere.

His purse is his lady, naturally he would not have her light; but how astonishing that a courtly lover should wish the green grass growing over him *unless* she made him heavy cheer! The most delightful and the most natural pun in Chaucer is among the professional glibnesses of the Sumner's friar. Dearer to God are the prayers, says he, of the abstemious mendicant than those of the gluttonous laity:

'Fro Paradys first, if I shal nat lye,
Was man out chaced for his glotonye;
And chaast was man in Paradys, certeyn'
(*Sumn. T.* 1915-7).

Chased out, and chaste in, what a beautiful thought! Of course the friar does not know he is punning, it is merely the way his mind works. One often hears modern priests zigzag along in the same desultory course, at the mercy of casual association.[15]

---

[15] A pun involves two completely separate meanings, not meanings which shade into each other. Therefore there are no such puns as a modern might suspect where flattering Placebo (*Merch. T.* 1513-5) congratulates poor old January on the high spirit he shows in choosing a young wife,—"it is an heigh corage"; or where it is said of the Sumner,

In daunger hadde he at his owne gyse
The yonge girles of the diocyse,
And knew hir counseil, and was al hir reed (*Prol.* 663-5).

Power, power to harm, liability to be harmed, shade into each other, and the last meaning is somewhat modern. In danger the young people truly were, but the danger was not from him. When one remembers over what cases the church courts had jurisdiction (cf. *Fri. T.* 1302), and the devious methods of the sumners (*Prol.* 649 ff., *Fri. T.* 1323 ff.), it is clear that this worthy spied out young men and women between whom scandal was brewing and then levied blackmail on them. But something like a pun may possibly underlie one of the chief cruxes of the *Prologue* (l. 670); why "gentle Pardoner *of Rouncival*"? Skeat's answer (that he was connected with the Hospital of the Blessed Mary of Rouncyvalle near Charing Cross) is unlikely, if not impossible. *Rouncival* in the sixteenth century meant a mannish woman, and the Pardoner is a womanish man (688 ff.). *Rouncy* means a riding horse, and the Pardoner is called "a gelding or a mare." The passages are not close together, so I feel no confidence in this suggestion. But there may be some such forgotten point.

The Birds of the Latin Poets. Ernest Whitney Martin, Associate Professor of Greek. 260 pp. 1914. Price, $1.00.

Acceleration in the Development of the Fossil Cephalopoda. James Perrin Smith, Professor of Paleontology. 30 pp., 15 plates. 1914. Price, 75c.

A Morphological Study of Some Members of the Genus Pallavicinia. Douglas Houghton Campbell, Professor of Botany, and Florence Williams. 44 pp., 23 text figures. 1914. Price, 50c.

The Evolution of Brazil Compared with that of Spanish and Anglo-Saxon America. Manuel de Oliveira Lima, Minister of Brazil to Belgium. 160 pp. 1914. Price, $1.00.

The Hemolymph Nodes of the Sheep. Arthur William Meyer, Professor of Anatomy. 74 pp., 1 plate, 4 colored plates. 1914. Price, $1.00.

An Introduction to the Study of the Endocrine Glands and Internal Secretions. (Lane Medical Lectures.) Sir Edward Schäfer, Regius Professor of Physiology in the University of Edinburgh. 94 pp. 1914. Price, 75c.

The Pronoun of Address in English Literature of the Thirteenth Century. Arthur Garfield Kennedy, Instructor in English Philology. 91 pp. 1915. Price, $1.00.

The Anoplura and Mallophaga of North American Mammals. Vernon Lyman Kellogg, Professor of Entomology, and Gordon Floyd Ferris. 74 pp., 18 text figures, 8 plates. 1915. Price, 75c.

The Flügel Memorial Volume. Papers by Ewald Flügel, late Professor of English Philology, his Colleagues and Students. 232 pp. 1916. Price, $1.50.